

Summative Evaluation of the Nevada Educational Technology Implementation Fund Grant

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Executive Summary

The Nevada Educational Technology Implementation Fund Grant (ETIF) was a two-year award given in fall 2009 to school districts across the state through a competitive RFP process. The total allocation, approved by the state legislature, was just over \$4,000,000. In response to the RFP, 16 districts formed a consortium and submitted one proposal in which each participating district described its plan for utilizing grant funds within the scope of five funding categories: High Quality Content Material, Professional Development, Technical Services, Infrastructure, and Pilot Projects. Lincoln County School District submitted its own proposal. Both proposals were approved by the Nevada Commission on Educational Technology and grantees received awards ranging from just under \$40K in a few very small districts like Eureka County, Lander County, Esmeralda County, Pershing County, and White Pine County, to over \$2,000,000 awarded to Clark County. This summative report of the ETIF Grant presents a statewide overview of outcomes relative to each funding category, as well as an appended summary of implementation by district.

Districts were awarded funds to address needs across all five funding categories, though the majority used grant funds for technical services (i.e., workstations, servers, interactive whiteboards, laptops, iPods, etc.). Less than half of the districts used ETIF Grant funds to support professional development, and two school districts used funds exclusively for infrastructure upgrades. Two districts, Lincoln County and Washoe County, proposed implementing pilot projects (1:1 laptop and cloud computing initiatives, respectively), but only Lincoln County School District was able to implement this component of its proposal. Nye County was the only school district allowed to draw down its entire award for use in Year 1. These funds were used to pay the salary of one Technology Integration Specialist (TIS) at Pahrump Valley High School. The position was only funded for one year, and at the end of Year 1 the project director retired, the TIS left the district, and no data were collected from the high school teachers during Year 2.

The statewide evaluation of the ETIF Grant posed two main challenges for evaluators. First, the disparity in districts' implementation plans required a more generalized focus for data collection in order to generate sufficient common data points upon which to draw conclusions about the statewide impact of the grant. Second, the level of districts' implementation (i.e., technology acquisition in the absence of a professional development component) and the length of time grantees had to implement their proposed plans, dictated the scope of the evaluation and the ability of evaluators to gather much more than anecdotal data on the extent to which grant funded activities had an impact on students. It is important for the reader to note that while the funding for the ETIF Grant spanned two academic years (2009-10 and 2010-11), most grantees did not roll out their projects until late in the fall of 2009 and some districts, particularly those that used funds to upgrade infrastructure, did not begin their projects until summer 2010. The reasons for the delayed roll out varied by district, but in many instances it was dictated by circumstance (i.e., delayed draw down of funds in Year 1 and waiting for bid approval) rather than by design (i.e., waiting to install network routers and switches in the summer to avoid disrupting existing network usage). The reader is advised to view the outcomes within the scope of this diminished implementation period.

Final Awards by District

District	2-Year Award
Carson	\$83,851.66
Churchill	\$52,032.29
Clark	\$2,658,346.11
Douglas	\$60,193.23
Elko	\$89,452.00
Esmeralda	\$38,725.83
Eureka	\$37,283.23
Humboldt	\$46,309.20
Lander	\$39,315.30
Lincoln	\$245,196.61
Lyon	\$83,101.50
Mineral	\$39,174.20
Nye	\$62,638.75
Storey	\$40,105.20
Pershing	\$37,700.83
Washoe	\$552,023.80
White Pine	\$35,770.83
Total	\$4,201,220.57

Project Directors' Satisfaction with Grant Implementation

In general, project directors indicated that they were satisfied with what had been accomplished with grant funds in their respective district. In many instances the ETIF Grant was used to address districts' immediate needs. This was the case more so in districts that used funds to replace computers that were anywhere from five to 12 years old. Satisfaction was just as high, if not more so, in districts that used the ETIF Grant to supplement a technology-related area in which it was already focused. This is the case for districts such as Carson City that already had SMART Boards in teachers' classrooms but wanted to support teachers' use of the boards by implementing a professional development model, as well as Esmeralda County where the district is heavily invested in providing teachers and students with the most current technology tools to keep them competitive and as connected as students in larger districts.

Lessons Learned from Grant Implementation

The "lessons learned" shared by project directors varied depending on the focus area of the grant, but most project directors indicated a need to focus on teacher professional development (PD). This was cited as a

priority even for districts that had not used grant funds to support technology-related professional development. The Carson City project director cited the high quality of the SMART Board trainers as the “critical component” to the district’s success in implementing the grant. As it relates to the tuition reimbursement of teachers who completed online professional development, the Clark County project director, in retrospect, feels that the district needed to align this PD opportunity to district initiatives. As she stated, “I think it’s the instructional support I wish I could have allocated differently. I think that the professional development pieces need to be tied directly and obviously to our district technology plan. For example, for the tuition reimbursement the course options could have been narrowed down to areas of focus and alignment with what the district initiatives are. The PD needs to be tied to improving math and reading.” The Pershing County project director also expressed a need for grant funds to support teacher professional development. She shared that not only do the teachers trying to use the iPods need more training, but she indicated that the eMints teachers (who received new computers with ETIF funds) have reached a plateau and “haven’t learned anything new in a few years.”

In Humboldt County, a district that did not use grant funds to support teacher professional development, the project director felt that this was a missing component. She shared the following comment related to her desire to make PD a more integral component of future technology acquisitions. “It’s sad about the number of teachers who don’t get professional development so they don’t know how to use them [the computers] more...We try to be flexible with the schedule but they feel that they don’t have the time to do it. I’d like to see any way to get the PD. I think that if the teachers want it in their classroom they should have to attend PD. The more they can get trained the better.”

Other lessons learned had to do with planning for technology support needs. The Lincoln County project director indicated that more planning should have gone into preparing for technical support needs before the technology was deployed. He stated, “I really think that its more critical than I realized to nail down what the tech support needs to look like in advance.” Not doing so had implications related to such things as establishing and managing secure space for students to save their files, building an infrastructure for wireless computing, and dealing with inadequate bandwidth issues when all students tried to access the Internet at the same time. Much of what Lincoln County implemented in terms of technical support problem-solving strategies and solutions came out of a “learn as you go” model. As such, the lessons learned are offered more as a cautionary tale to other small districts that might consider a similar undertaking more so than regret that things had not been done differently.

Eureka County also had lessons learned regarding addressing the technical support needs of a small district. In discussing his decision to outsource the implementation of the district’s wireless network, the project director said, “My intent with going with Dell was to have someone else do it because I’m pretty busy. I didn’t have the expertise with wireless so it made sense to subcontract.” However, this turned out not to meet the district’s needs because it took the better part of the school year to get everything installed and working properly. When the project director was interviewed in early May 2011, he indicated that after establishing a relationship with Dell in November 2010 to configure the wireless network, it took until late April to get it installed. The following quote describes the district’s experience in outsourcing the work.

I had them [Dell] do the implementation. I did that in November and it's been a long process to get that all figured out and installed. It just got installed last week. I would not recommend them again as a vendor. They are too big. Getting their implementation team going and meshing with us over here just took a lot of time. There was a lot of back and forth. They ended up subcontracting with an outfit in Texas and then they subcontracted with another outfit in Las Vegas and then to install the access points they subcontracted with a local guy.

Challenges

It is well known that the ETIF Grant was not sufficient to address the full scope of districts' technology equipment, infrastructure, and professional development needs. Therefore, barring districts' persistent financial need, the greatest challenge faced by districts in implementing the grant was limited human resources. In many districts one person is responsible for juggling multiple technology-related responsibilities and project directors lamented that they were hindered by this staffing issue. This is the case in Esmeralda County, where one person is responsible for technology for the whole district, which only has 100 students, but has its three schools up to 75 miles away from one another. As the Esmeralda County project director/Technology Director stated, "Being the only technician for three school and 100 kids, I tend to run a lot. It's just being the only technician in the school district that makes it hard to get things done when two different people in two different places both need you." The Washoe County project director expressed a similar concern. In his dual role as Professional Development Director, he indicated that "one person is not effective" in meeting teachers' training needs. This human resource issue is important in understanding the contextual factors that impacted districts' grant implementation. In Carson City and Douglas County teachers served in a supplemental training support role to assist teachers in using their interactive whiteboard. No one served in that capacity in Washoe County so teachers did not get what the project director referred to as "process time," and the difference in implementation is reflected in the outcomes discussed in further detail within the report. In Humboldt County, with only three IT staff, the project director reported that it took most of the 2010-11 school year to install all of the new computers. This was also the case in Lyon County where the network upgrade was all done "in house." The Lyon County project director reported that the biggest challenge the district faced in implementing the grant was not having enough staff. To get all of the work done he reported that people had to be pulled from their regular positions to help complete the job.

Impact on Students and Changes in Classroom Instruction

Most of the impact and teacher change data are anecdotal reports shared by teachers in response to Technology Use Survey questions and interview questions. Other data are summarized from implementation data provided by Clark County School District's FASSTMath Coordinator and surveys administered to students in Churchill County and Lincoln County. The majority of teachers reported an increase in student engagement when using technology. Other student outcomes, as reported by teachers included: better retention of content, increased participation in the learning process, increased use of technology to develop student projects, increased access to online content to supplement classroom instruction, and increased student achievement. The most notable self-reported increases in classroom teaching included: an increased comfort level with facilitating student-centered learning, using technology for better student assessment, and using technology to facilitate differentiated instruction.

Students' self-report data from surveys administered at the end of each semester in which the Churchill County Junior High Intro to Technology class was taught provide evidence of positive outcomes related to the SmartLab curriculum. When asked about the most valuable thing they learned in the class, students' responses included problem solving skills, time management and organizational skills, as well as how to work with others.

Students in Lincoln County self-reported baseline and end-of-year ratings of their technology skills. When the data sets were compared using an Independent Samples T-Test, evaluators found a statistically significant increase in 16 of 25 skill indicators and a statistically significant increase in the frequency with which students use the netbook in three of their four core courses.

Funding Category	District	Impact on Students	Changes in Classroom Teaching
High Quality Content Material	Churchill County (SmartLab 21st Century Learning Curriculum)	<ul style="list-style-type: none"> Increased technology skills Better problem solving skills Learned to work well with others Acquired real world skills/knowledge Learned time management and organizational skills 	
	Clark County (FASTTMath Fact Fluency Software)	Students who use the FASTTMath program as prescribed show a greater increase in their fluency levels than students who do not use it as prescribed. At some schools students fluency levels increased more than 100% over their baseline assessment	
Professional Development	Carson City (SMART Board Training)	<ul style="list-style-type: none"> Increased student engagement Improved student retention of content Increased confidence and proficiency in the use of technology Increased student participation in learning process 	<ul style="list-style-type: none"> Increased comfort level in using the SMART Board Better, more effective lessons Ability to differentiate instruction to meet students' learning needs Accessing more resources Trying new approaches to teaching and using technology
	Clark County (Vegas PBS TeacherLine Courses)	<ul style="list-style-type: none"> Students better prepared for next grade level Better scores on assessments Students gaining more thorough understanding of content Increased student engagement and enjoyment of learning activities Improved use of school computer resources Better student retention of content Improved student writing 	<ul style="list-style-type: none"> Increased/renewed enjoyment in teaching content Increased focus on student assessment Use of data to tailor instruction Increased use of technology Increased teacher collaboration Use of blogs and other social media More open-ended questioning to test for student understanding

Funding Category	District	Impact on Students	Changes in Classroom Teaching
Professional Development	Douglas County (Promethean Board, ActivSlate, ActivExpression Training)	<ul style="list-style-type: none"> Increased student engagement Increased instructional time Increased planned and “on the fly” testing for student understanding Increased student participation in learning process More meaningful whole class discussions 	<ul style="list-style-type: none"> Better prepared and more organized for each class Increased awareness of classroom activity Increased interactivity of lessons Increased time spent on lesson plans Increased student-centered learning Increased use of supplemental materials to support student learning
	Elko/White Pine (Nevada Pathway Project)	<ul style="list-style-type: none"> Increased use of technology as a resource in their everyday learning. Increased student engagement Increased pride as a result of completing projects 	<ul style="list-style-type: none"> Focus on TPACK Empowering students to become self-guided learners Overall increase in use of technology
	Washoe (Promethean Board Training)	<ul style="list-style-type: none"> Increased student engagement Increased interaction with teachers during lesson Increased motivation to share work with the class Increased use of ActivExpression 	<ul style="list-style-type: none"> Adding interactive components to lessons Increased efficiency as a result of saving Flipchart lessons Decrease in the amount of paper materials handed out to students Increase in the amount of supplemental material added to lessons
Pilot Project	Lincoln County (1:1 laptop project)	<ul style="list-style-type: none"> Increased use of technology Anytime/anywhere learning Increased student engagement Increased motivation of low-achieving students Statistically significant increase in students technology skills and use of technology in core content classes 	<ul style="list-style-type: none"> Increased comfort with student-centered learning Increased use of supplemental material Increased use of web apps for student assignments Increased organization and efficiency
	Clark County (New Workstations and Servers)	<ul style="list-style-type: none"> Students learned how to do Internet searches Increased confidence in navigating the Internet Increased use of educational games Students becoming independent learners Increased engagement Increase in number of student technology projects 	<ul style="list-style-type: none"> Increase in the use of technology for differentiated instruction Increased use of software Ability to connect the computer to a projector/document camera Quicker access to websites Increased efficiency

Funding Category	District	Impact on Students	Changes in Classroom Teaching
Technical Services	Esmeralda County (Interactive Slates)	<ul style="list-style-type: none"> Increased student engagement Increased student interactivity during lessons Improved ability of students' to "visualize" what they are learning 	<ul style="list-style-type: none"> Being able to move around the room to monitor students Ease in displaying information
	Eureka County (New Workstations)	<ul style="list-style-type: none"> Increased student engagement Improved student collaboration (i.e., sharing and editing during writing process) Learning from online content not previously accessible on older computers Increase in assignments requiring time in the computer lab 	<ul style="list-style-type: none"> Using textbook CDs instead of purchasing new books Increased access to content-related material Use of streaming video Increased use of online testing and homework submission
Technical Services	Humboldt County (New Workstations)	<ul style="list-style-type: none"> Students able to quickly access information on teachers' classroom computer rather than having to plan/schedule time in the computer lab Increased use of classroom SMART-Board Better understanding of content when computer is used to provide visual representations 	<ul style="list-style-type: none"> Increased efficiency with faster computer Increased use of computer for instructional purposes Increased use of projector and SMART Board Using computer to access content not available in outdated texts Accessing more online supplemental teaching resources Increased ability to quickly search the Internet to respond to students' research questions
	Pershing County (iPods)	<ul style="list-style-type: none"> Students become instantly engaged when using technology. Students are more eager to work on tasks on the iPod touch than on paper. 	<ul style="list-style-type: none"> Increased integration of technology into lessons Use Apps for students to work independently on skills
	Storey County (New Workstations)	<ul style="list-style-type: none"> Connecting visual learning with numerical learning More access to the Internet Increased interaction with the SMART Board Teacher computer provides an extra workstation for students 	<ul style="list-style-type: none"> Shorter lectures and more visual communication Increased use of the SMART Board

Funding Category	District	Impact on Students	Changes in Classroom Teaching
Infrastructure	Lyon County (Network up-grade)	<ul style="list-style-type: none"> Increased use of classroom computers and computer lab Increase in the number of research-related project students do Increased opportunity for individualized instruction Improved MAPS scores 	<ul style="list-style-type: none"> Increased use of Internet resources due to faster connection Increased time spent looking for supplemental Internet resources More efficient communication between staff Increased use of technology based on network reliability Accessing more resources Trying new approaches to teaching and using technology
	Mineral County (Web and SPAM Filtering, servers)	<ul style="list-style-type: none"> Improved access to needed resources pushed to desktop 	<ul style="list-style-type: none"> Increased use of computer Increased efficiency Significant decrease in SPAM/easier to use email More websites blocked than prior to upgrade; requires principal approval to request that sites be unblocked

Growth and Sustainability Outcomes

The ETIF grant served as seed money for a few districts to build on their respective technology plans. In Douglas County, the district used recommendations from the Year 1 Interim report to refine its professional development plan. The revised PD plan was then incorporated into a proposal that the district submitted to a private donor. Douglas County received a \$1M grant from which it allocated funds to support a cohort of teachers' participation in a 4-day training course that prepared them to provide Promethean Board training for teachers at their respective school sites. This donor-funded grant also supported additional vendor-provided PD, which supplemented the training teachers received from Washoe County.

Lyon County School District used its \$83K in ETIF grant funds as matching in its application for ARRA Broadband Technology Opportunity Program (BTOP) monies. In September 2010 the district received \$750,000, which was used to fund six new computer centers to serve the entire community and provide technology training for county residents.

Even in the absence of a major infusion of additional technology dollars, districts are making plans to expand on what they implemented with the ETIF Grant. In Carson City School District the Technology Committee is considering adopting the SMART Board training model (i.e., using Master Teachers to provide the training and making Site Trainers available at each school site) to implement its training on Web 2.0 and 21st Century Learning Tools. The Churchill County School District has expanded implementation of the SmartLab into its high school and has been asked by the developers of the SmartLab curriculum to participate in an elementary school pilot program. The Lincoln County School District has decided to grow the 1:1 laptop program until each 5th-12th grade students is equipped with a netbook computer. The program expanded from one middle school in Year 1 to all 6th-8th grade students in the district in Year 2.

Introduction

Recap of Year 1 Implementation and Outcomes

In July 2010, Wexford Institute submitted an Interim Evaluation Report on the statewide implementation and short term outcomes of the Nevada Educational Technology Implementation Fund (ETIF) Grant. Using data collected from each district's project director, evaluators reported that over 250 schools, 1100 teachers, and 42,000 students were impacted by the grant in some capacity including, but not limited to, upgraded wired or wireless connectivity, upgraded network capability, receipt of new hardware, software, and/or peripheral devices, and teacher professional development.

The report also included an overview of district implementation across funding categories and a summary of grant-funded expenditures which showed that the greatest percentage (63%) of the \$2.1 million allocated in Year 1 was spent on technical services, followed by 17 percent for infrastructure, 14 percent for professional development, and six percent for high quality content.

Table 1. District Awards by Funding Category

District	High Quality Content Material	Professional Development	Pilot Project	Technical Services	Infrastructure
Carson City		X			
Churchill County	X				
Clark County	X	X		X	X
Douglas County				X	
Elko County				X	
Esmeralda County				X	
Eureka County				X	X
Humboldt County				X	
Lander County					X
Lincoln County	X	X	X	X	X
Lyon County					X
Mineral County					X
Nye County		X			
Pershing County				X	
Storey County				X	
Washoe County		X	X	X	
White Pine County		X		X	

Evaluators reported that teachers who participated in structured professional development sessions, had, on average, just 21 hours of training for the entire school year. This ranged from a low of 7.5 hours to a high of over 45 hours for teachers who participated in the Nevada Pathway Project. In terms of training hours provided by Technology Integration Specialists (TIS), evaluators analyzed time sheets to determine that regardless of TIS full-time (in Nye County) or part-time (in Lincoln County) status, staff in this position provided less than 10 percent of their paid time in direct training to teachers. Evaluators noted that there were contextual factors related to the TIS outcomes, namely start date and time needed to build rapport with teachers. The overall recommendation related to PD was that, given the ratio of districts that received money for equipment to those that used grant funds to support teacher professional development, future funding include a requirement that a minimum percentage of the award be allocated toward professional development.

The student outcomes for Year 1 primarily included reports of increased student engagement, collaboration, and quality of work. There were also reports of a decrease in behavior problems. The outcomes for teachers at the end of Year 1 included technology integration by previously reluctant teachers, use of technology to complete administrative tasks, changes toward more student-centered learning, increased use of web-based resources, increased collaboration among staff, and an increase in overall productivity. Evaluators also reported the results of survey data in which teachers were asked to indicate the amount of time they and their students spent, in a given class period, using the technology that was purchased with grant funds. Nearly one-third of the 560 teachers who responded to the survey reported that they (30%) and their students (31%) used their grant-funded technology at least half of the class period.

Year 2 Evaluation

Evaluators focused the Year 2 evaluation on capturing common data points across districts that would provide an overview of the statewide impact of the funds awarded through the ETIF Grant. Administering an online survey and conducting phone interviews with project directors was the primary means by which evaluators collected data; however, site visits were conducted in five districts. Common areas upon which data were collected included: frequency of technology use by teachers and students, teachers' perceptions about changes in their teaching practice, teachers' level of agreement with statements about how technology is used at their school, and, for those whom it was applicable, teachers' feedback on the professional development in which they participated. Questions included in the project director interview protocol focused on satisfaction with grant implementation, lessons learned, concerns about sustainability, and plans for expanding on ETIF grant-funded initiatives. The reader will find that this summative report of the Nevada Educational Technology Implementation Fund Grant provides sufficient data upon which to determine the outcomes of the grant, collectively across the state, and within each district.

Report Outline

The remainder of this report is divided into four parts. Part One provides an overview of the methods used to collect data during the 2010-11 school year. Part Two provides a brief overview of Year 2 grant implementation by funding categories. Part Three provides an overview of outcomes based on funding categories, and Part Four of the report provides an implementation summary for each district.

Part One: Data Collection

Year 2 Data Collection Overview

Evaluators administered online teacher and student surveys, conducted face-to-face and telephone interviews with project directors, conducted site visits, which included interviews and observations, and analyzed additional data sources. Table 1 shows the data collection strategies used for each district. The evaluation budget, paired with an assessment of implementation from Year 1 dictated the number of site visits that occurred in Year 2. Evaluators determined that sites in which a significant amount of professional development took place, warranted a repeat visit in Year 2. Therefore, between February-May 2011, evaluators conducted site visits to schools in the following districts: Carson City, Clark County, Douglas County, Lincoln County, and Washoe County.

Table 1. Data Collection Strategy by District

District	Teacher Survey	Student Survey	Teacher Interview	Project Director Interview	Other Staff Interviews	Classroom Observation	Additional Data
Carson City	X		X	X	X	X	
Churchill		X		X	X		
Clark County	X		X	X			X
Douglas	X		X	X		X	
Elko	X			X			X
Esmeralda	X			X			
Eureka	X			X			
Humboldt	X			X			
Lander				X			
Lincoln	X	X	X	X	X	X	
Lyon	X			X			
Mineral	X			X			X
Pershing	X			X			
Storey	X			X			
Washoe	X		X	X		X	
White Pine	X			X			X

Online Surveys

Consistent with the Year 1 evaluation plan, evaluators designed an online Technology Use Survey for the purpose of gathering common data across districts. With a few exceptions, all of the online surveys were administered to teachers in May 2011. As in Year 1, two forms of the survey were developed; one was administered to teachers who received grant-funded professional development, and the other was administered to teachers whose district had used grant funds to purchase equipment, instructional programs, and/or upgrade network infrastructure. Depending on the district, teachers received a link to the online survey either directly from SurveyMonkey or in an email disseminated by their project director.

A total of 534 teachers responded to the survey, which represents an average response rate of 64 percent. This is 16 percent lower than the 76 percent response rate received on the Year 1 survey. The decrease is most likely due to the increased number of survey recipients (1150 in Year 2 compared to 792 in Year 1). While slightly lower than the previous year it is still higher than typical survey response rates of 30-40 percent. It should be noted that this response rate is only in reference to the Technology Use Survey. The reader should also note that the survey was not administered to teachers in Churchill County (the district's implementation was focused on students) or Nye County (the district was not funded in Year 2). Evaluators attempted to administer the survey to teachers in Lander County, but no responses were received. Two follow-up attempts were made to receive data, but evaluators did not do a final check with the project director to determine the reason why teachers did not respond to the survey.

Table 2. Number of Respondents to Technology Use Survey by District

District	# of Survey Respondents	# of Survey Recipients	Response Rate
Carson City	26	60	43%
Clark County	100	313	32%
Douglas	22	22	100%
Elko	2	2	100%
Esmeralda	3	6	50%
Eureka	11	15	73%
Humboldt	75	113	66%
Lander	0	unknown	0
Lincoln	16	20	80%
Lyon	206	507	42%
Mineral	27	29	93%
Pershing	4	7	57%
Storey	6	20	30%
Washoe	35	35	100%
White Pine	1	1	100%

The following is a list of surveys administered at other times during Year 2 of the grant.

District	Survey	Date Administered	Grant Participant
Churchill County	Retrospective Course Feedback Survey	October 2010	9th grade students who completed the Intro to Tech class in 2009-10
	Intro to Tech Class Feedback Survey	December 2010 May 2011	Students who completed the course each semester
Clark County	TeacherLine Follow Up Survey	Feb. 2011	Teachers who completed courses in 2009-10
	TeacherLine Feedback Survey	Feb. 2011	Teachers who completed courses in fall 2010
	FASTTMath Feedback Survey	March 2011	Teachers who received FASTTMath accounts in Year 1 or Year 2
Lincoln County	Baseline Technology Skills and Motivation Survey	October 2010	6th-8th grade students
	Technology Needs Assessment Survey	October 2010	6th-8th grade teachers
	Student End-of-Year Technology Skills and Motivation Survey	May 2011	6th-8th grade students

Teacher Interviews

During site visits in February, April, and May 2011 evaluators conducted a combined total of 45 face-to-face interviews with teachers in Carson City, Clark County, Douglas County, Lincoln County, and Washoe County. Evaluators used a structured interview protocol to conduct one-on-one and small group interviews that lasted between 10-30 minutes.

School District	Number of Teacher Interviews
Carson City	18
Clark County	12
Douglas County	5
Lincoln County	7
Washoe County	3

Project Director Interviews

Evaluators used a structured interview protocol to conduct interviews with project directors in each district. Thirteen of these interviews were conducted over the phone (or via Skype) and three were conducted face-to-face during site visits. Each interview lasted between 20-60 minutes.

Additional Interviews

In addition to teacher and project director interviews, evaluators conducted semi-structured interviews with people in the following positions: the project coordinator in Carson City, Master Teachers who provided training in Carson City, the SmartLab facilitator in Churchill County, the Technology Integration Specialists in Lincoln County, and the district Superintendent in Mineral County. Evaluators also conducted a focus group with Educational Computing Specialists from Clark County.

Classroom Observations

Evaluators conducted classroom observations in Carson City, Douglas County, Lincoln County, and Washoe County. Teachers selected for observation were a combination of those who volunteered and those selected by their project director/coordinator.

School District	Number of Classroom Observations
Carson City	12
Douglas County	5
Lincoln County	6
Washoe County	3

Additional Data

Evaluators received additional data from Clark County in the form of Implementation and Summary reports generated by the district's FASTTMath administrator. On behalf of Mineral County, Oasis Online provided a report of the district's web traffic that included the education and reference sites most frequently visited. Evaluators also received the survey data provided by researchers at UNLV for the three teachers (two in Elko, one in Washoe County) who participated in the Nevada Pathway Project.

Part Two: Grant Implementation by Funding Category

High Quality Content Material

Churchill County: SmartLab 21st Century Skills Curriculum

Churchill County continued to offer its SmartLab computer class for 8th grade students at the junior high school. The course is one full semester, and is taken as an elective. The purpose of the SmartLab activities is to guide students through a series of engagements that teach and reinforce 21st Century Learning skills. The content of the engagements is STEM-based, but the intent of the engagements is not to teach new content; rather, students are encouraged to work in pairs, establish daily objectives, make their own decisions about which level of engagement (there are three) they want to complete, and reflect on what they have learned. Students' activities are managed through the web-based portfolio that is part of the SmartLab package, and their use of SmartLab equipment (i.e., hardware, software, and science-related tools needed to complete the engagements) is facilitated by the classroom teacher.

In Year 2 of the grant, Churchill County offered three sections of the course. One section was offered in fall 2010, one in spring 2011, and they also piloted a full-year course with a group of students who had been selected for participation by their math, science, and/or computer teacher.

Clark County: FASTTMath Fact Fluency Software

FASTTMath is a software program designed to help elementary and middle school students achieve math facts fluency in addition, subtraction, multiplication, and division. During Year 1 the software was purchased for 10 schools; during Year 2 grant funds were used to support 10 additional schools. The producers of FASTTMath recommend that students use the program three times per week, at least 15 minutes each time to reach fluency with a given operation. After completing a placement assessment, which includes the program making adjustments for individual students' typing speed, students work through a series of games, activities, and timed drills until the program indicates that they have reached fluency.

Professional Development

Carson City: SMART Board Training

Carson City School District continued to offer SMART Board training. In Year 1, the training program was provided almost exclusively to elementary teachers, though some middle school teachers participated in both Year 1 and Year 2. In Year 2 the program expanded to Carson High School. A total of 60 teachers (19 high school, two middle school, and 29 elementary) participated in one of three training programs. Each round of training provided 17.5 hours of professional development across seven 3.5 hour sessions offered on consecutive Friday evenings from 3:30-7:00PM.

Teachers were required to complete five of the seven sessions in order to receive one professional growth credit and one recertification credit. Each teacher, whether new to the training program or returning from Year 1 was required to participate in the “Stop and Share” session, in which each teacher presented two SMART Board lessons they had done in their class. At the end of the class, all participants received a thumb drive with all of the lessons developed by teachers in their respective cohort. The professional development was provided by 10 Master Teachers (fall of whom are district staff, and five of whom are SMART Board certified trainers). Site Trainers (one at each elementary school and four at the high school) provided technical and skills support to teachers enrolled in the training program.

Clark County: Vegas PBS TeacherLine Online Professional Development

Clark County used a portion of its grant funds to provide tuition reimbursement to over 260 teachers who completed Vegas PBS TeacherLine courses in fall 2010 and spring 2011. Courses are offered in five focus areas: Instructional Strategies, Instructional Technology, Reading/Language Arts, Mathematics, and Science. Elementary school teachers made up the greatest percentage (43%) of teachers who were reimbursed for courses. Some teachers completed three or more courses during the school year; most completed just one.

Lincoln County: Technology Integration Specialists

Lincoln County retained the part-time (20 hours/week) Technology Integration Specialist (TIS) hired during Year 1 and hired a second part-time (15 hours/week) TIS to provide just-in-time training support to 6th-8th grade teachers at the district’s five elementary and middle schools. The purpose of the TIS training model was to provide teachers with one-on-one personalized, rather than group, support to address their immediate needs related to integrating use of the netbooks into their curriculum. The TIS hired in Year 1 supported teachers at four schools and the TIS hired in Year 2 supported teachers in Pahrangat Valley.

Washoe County: Promethean Interactive Device Training

A portion of Washoe County’s grant funds were used to pay the salary of the district’s Professional Development Coordinator who was also the project director in Year 2. In the role of PD Coordinator, he provided over 100 hours of training to teachers on how to use the Promethean interactive whiteboard at beginning and advanced levels. The training was offered to teachers through a series of training sessions including one hour PD provided twice a month during PLC meetings, 1.5 hour sessions offered during early release days, and eight hour training sessions on ActivBoard Core Essentials and ActivBoard Intermediate Essentials. For the purposes of documenting impact of the professional development, only the 35 teachers who received a new interactive whiteboard are considered grant participants, but it is important to note that grant funds facilitated the training of hundreds of teachers in the district.

Professional Development Facilitated by Grant-Funded Technology Acquisition

While other funds covered the professional development expense for teachers in Douglas County, Elko County and White Pine County, evaluators collected PD feedback data from these teachers because their participation in the PD would not have been possible without the use of the ETIF Grant to purchase the technology on which they were trained. For the purposes of this evaluation this includes 22 teachers from Douglas County who participated in interactive whiteboard (Promethean), document camera (ActiView), and

student response system (ActivExpression) training as well as two teachers from Elko County and one from White Pine County who participated in the Nevada Pathway Project.

Pilot Project

Lincoln County was the only school district that planned and implemented a pilot project funded by the ETIF Grant. In Year 1, the district launched a pilot of its 1:1 laptop program at one middle school. The implementation built upon planning that had been happening at the school prior to receipt of the grant such as curriculum redesign that included a focus on cross-curricular projects; the integration of technology into core content areas to reinforce development of 21st Century Skills; a move toward online textbook adoption and increased use of web-based instructional content and resources; and an overall interest in improving the home/school connection by providing students with access to technology at home. In Year 2 the project expanded from one middle school to all 6th-8th grade students in the district.

Technical Services

The majority of districts used grant funds to complete the technology purchasing plans put in place during Year 1. The figure below shows the type of equipment districts purchased with ETIF Grant money in Year 2.

District	Equipment Purchased	Purchased For
Clark County	Teacher Workstations School Servers	180 units dispersed among 10 schools
Douglas County	Interactive whiteboards Learner Response System iPads	Purchased for teachers who did not receive equipment in Year 1
Elko County	Flip video cameras	Two teachers
Esmeralda County	iPads Laptop computers	Purchased 23 units toward fulfilling plan for 1:1 student and teacher iPads
Humboldt County	Teacher Workstations	75 teachers
Lincoln County	Teacher and Student netbook computers	All 6th-8th grade students and teachers in the district
Pershing County	Teacher Workstations	eMints teachers
Storey County	Classroom Computers	20 units dispersed to 1st-5th grade classrooms
Washoe County	Interactive whiteboards	35 units for teachers who did not receive in Year 1
White Pine County	Student Laptops Student iPods	One teacher to facilitate 1:1

Infrastructure

Districts that used grant funds to maintain or upgrade infrastructure included Clark County, Eureka County, Lander County, Lyon County, and Mineral County. Of the five districts, only Clark County used grant funds to renew its filtering and Novell licenses. Eureka County installed a wireless network at all three of its campuses. Lander County completed the installation of new switches to improve network speed and reliability. Lyon County completed its plan to improve network functionality and reliability. Mineral County completed configuration of new servers that allow the IT staff to push content directly to teacher and student workstations.

Part Three: Outcomes by Funding Category

High Quality Content Material

Churchill County: SmartLab 21st Century Skills Curriculum

Evaluators gathered course feedback from four cohorts of students: 9th graders who had completed the course in 2009-10, 8th graders who completed the course in fall 2010, 8th graders who completed the course in spring 2011, and a small cohort of 8th graders who piloted a full year implementation of the course.

9th Grade Retrospective on Intro to Technology Class

A total of 159 students responded to a survey that was administered to 9th grade students to gather data on the impact that the 21st Century Learning experiences they had as 8th graders in the Intro to Technology class were having on their current course experiences. Table 3 shows the percentage of students who agreed/strongly agreed with statements regarding their current attitudes and practices related to coursework.

9th graders were more likely to agree with statements about their abilities than with those about the skills and resources they put to use in their classes. For example, 92 percent of the students agreed or strongly agreed that they make an effort to do their best work and 95 percent indicated confidence in their ability to do well in classes if they work hard. Yet, only 45 percent of students agreed/strongly agreed that they often take time to learn more about a subject than what is presented in class. This question was added to gauge students transfer of research skills learned in the Intro to Tech Class. Likewise, just 54 percent of students agreed/strongly agreed with the statement, "I like to be challenged in my classes."

Based on the survey results, two positive outcomes of the Intro to Tech class appear to be that nearly three-fourths of the students (74%) agreed/strongly agreed that the class increased their confidence in trying different strategies to solve problems and 86 percent agreed/strongly agreed that as a result of their class experience they enjoy working with others on projects. These two data points are consistent with data gathered from students who completed the Intro to Tech class during the 2010-11 school year. When asked what was the most valuable thing they learned in the class, many of the students' responses were related to learning problem solving skills and how to work with others.

Table 3. 9th Grade Students' Agreement with Statements about the Intro to Tech Class

Statement	% Agree/ Strongly Agree
I make an effort to do the best work I can in all of my classes.	92%
I feel confident that I can do well in my classes if I work hard.	95%
I often take the time to learn more about a subject than what is presented in class.	45%

Statement	% Agree/ Strongly Agree
I feel the Intro to Tech class increased my confidence in trying different strategies to solve problems.	74%
I like to be challenged in my classes.	54%
As a result of my experience in the Intro to Tech class, I enjoy working with other classmates on projects	86%
I feel the Intro to Tech class increased my ability to communicate my thoughts to my teachers.	56%
I feel the Intro to Tech class increased my ability to communicate my thoughts to my peers.	67%
I feel confident in my ability to express my thoughts in writing to my teachers.	59%
I feel confident in my ability to express my thoughts in writing to my peers.	60%
I sometimes use skills I learned in the Intro to Tech class to complete assignments in the classes I have now.	65%
When given a class project, I take the time to set objectives for how I am going to accomplish the goals of the project.	68%

2010-11 8th Grade Course Feedback

The following data are gathered from survey responses of over 260 students who completed the Intro to Tech class during the 2010-11 school year. Students completed an online course feedback survey at the end of each semester (December 2010 and May 2011), in which they responded to questions related to the SmartLab “engagements,” working with a partner, transfer of skills into other classes, and what they found most valuable about the course experience. Students who participated in the full year pilot also responded to questions similar to those presented to students on the 9th grade survey in order to establish a baseline by which the district can measure impact of the course on this cohort as they move through high school.

Table 4. Number of Intro to Tech Class Survey Responses by Cohort

Cohort	Response Count
Fall 2010	120
Spring 2010	117
Full Year Cohort (2010-11)	32

SmartLab Engagements

Engagements are the projects that students work on at each station in the SmartLab. They are presented at three difficulty levels for each topic and student pairs are able to self-select the level at which they will complete the tasks for a given engagement. As reported by the SmartLab Facilitator, most students begin at the first level and, time permitting, move on to the increasingly difficult challenges presented in the subsequent levels. The Facilitator estimated that students spent four to five days working on an engagement before moving to the next station.

Not surprisingly, students who took the class all year completed more engagements than those who took the class for one semester. While the data in Table 5, below, show that students in the full year cohort completed, on average, just two to three more engagements than either semester cohort, the Facilitator indicated that, “the all year group does so much more. They get into deeper levels. They get to create their own engagements and project ideas.” There are a total of 15 engagements in the SmartLab curriculum. In Year 1 students only completed about 10 engagements. The Facilitator reported that as he becomes more comfortable with the engagements and refines his student orientation to the class he is able to increase the amount of time students have to spend on each engagement. His hope is that students will be able to complete all 15 engagements during the 2011-12 school year.

Table 5. Number of Engagements Completed by Cohort

Cohort	Average	Mode
Fall 2010	11	11
Spring 2011	12	13
Full Year Cohort	14	15

Engagements that Students Enjoyed Most

While evaluators did not gather information about the full scope of activities involved with each of the engagements, a list of those that students most enjoyed is presented in the table below to provide an overview of the types of technology in which students are engaged based on the title of each engagement. Students’ interest varied, with just one or two students picking a particular engagement as their favorite; however, Stop Motion Animation, Sound Engineering, and Photoshop were selected as most enjoyable by students in the fall and spring cohorts.

Table 6. Engagements that Students Found Most Enjoyable

Engagement	Cohort	
	Fall 2010: N=120	Spring 2011: N=149
Stop Motion Animation w/ Frames	25%	28%
Sound Engineering w/ Sony Acid	23%	27%
Drawing, Painting, and Photo Editing w/ Photoshop	22%	22%
Video Editing and Production with Sony Vegas	17%	26%
Principles of Flight w/ Flight Simulator	16%	18%
Pneumatic Circuits f/ the Pneumatics Lab Kit	14%	23%
Mechanical Engineering f/ fischertechnik	14%	21%
Robotics featuring Lego NXT	13%	22%

What Students Found Memorable about the Engagements

Evaluators asked students to comment on what they found most memorable about the engagements. In analyzing the responses, most students' comments fell into two categories: having a sense of accomplishment (i.e., the reward of hard work) and having new experiences with hands-on activities (e.g., "I remember how fun it was to build and test our lego car"). Note that many of the STEM-based engagements require students to build and test something.

Sense of Accomplishments	<i>I remember when we finally put it to the test on the zip line and when we finally got it to work and it felt so good</i> <i>I remember the Fischertechnik the best because that was the engagement that me and my partner got it done on time, and did great on it.</i> <i>Making the fan move, it was really hard but really fun at the same time.</i>
Hands-on Activity/New Experience	<i>Making a movie</i> <i>How we made the movie about what we like</i> <i>Learning about Bernoulli's Principle</i> <i>Making funny pictures. And learning how to use photoshop</i> <i>I liked playing with the little ball and trying to make it stay in the air for a long time.</i> <i>Making and listening to the music we make</i> <i>I remember building things, and it was really fun.</i> <i>Taking the pictures for the stop motion animation.</i> <i>When we were at the Sim City station I remember creating our city and then destroying it with natural disasters</i> <i>We got to make cookies with the sun</i>

Students' Feedback on Intro to Tech Class Partnerships

Students work in pairs and do self- and peer-evaluations on their partnership. Communication and collaboration in the partnership are key 21st Century skills that the school district wants to develop in its students. Evaluators asked students to indicate their level of agreement with statements about their partnership. Students were fairly consistent in their level of agreement across cohorts. For example, most students (81%-86%) agreed or strongly agreed that they enjoyed working with a partner, that they had a good partner (78%-84%), and that they were a good partner (81%-88%). Although students indicated that they enjoyed working with a partner, the percentage of students who agreed or strongly agreed that they want to work with a partner in other classes drops to a low of 59 percent for students in the spring 2010 cohort and 69 percent for students in the full year cohort. Students were also less likely to agree/strongly agree with the statement, "I learned more from the engagements by working with a partner;" however, those

that did agree with the statement represent the majority, which is consistent with students' comments about the value of working in a partnership.

Table 7. Students' Level of Agreement with Statements about Working with a Partner

Statement	Percent Who Agree/Strongly Agree		
	Fall 2010 (N=120)	Spring 2011 (N=117)	Full Year Cohort (N=32)
I enjoyed working with a partner.	86%	81%	84%
I had a good partner.	84%	81%	78%
I was a good partner.	88%	85%	81%
I want to do more work with partners in my other classes.	72%	59%	69%
I learned more from the engagements by working with a partner.	73%	73%	66%

Transfer of Problem Solving Skills to Science Class

Evaluators asked students to indicate the frequency with which they applied problem solving skills used in the Intro to Tech class to solve problems in their science class. As shown in Figure 1 on the following page, students in the full year cohort were twice as likely as students in either semester cohort to report the transfer of skills "many times." The majority of students in the full year cohort (84%) also agreed/strongly agreed with the statement, "I sometimes use skills I learned in the Intro to Tech class to complete assignments in my other classes."

Most Valuable Thing Students Learned in the Intro to Tech Class

When students were asked to indicate the most valuable thing they learned in the Intro to Tech class, their responses fell into six categories: technology skills, problem solving skills, how to work with others, real-world skills/knowledge, persistence/determination, and time management/organization skills. Figure 2, on the following page, includes student quotes related to each of the categories.

Figure 1. Frequency of Students' Transfer of Intro to Tech Skills to Science Class

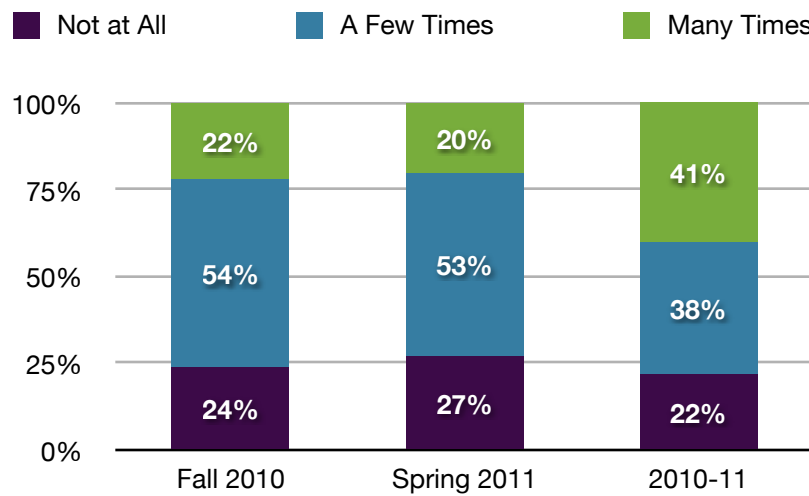


Figure 2. Student Comments about the Most Valuable Thing They Learned in the Intro to Tech Class

	Student Quotes
Technology Skills	<p><i>How to use the various computer programs</i></p> <p><i>How to do Photoshop</i></p> <p><i>How to work with technology in an efficient way</i></p>
Working with Others	<p><i>The most valuable thing that I learned in this class was learning how to work with a partner and having both of us doing something instead of one of us doing all the work.</i></p> <p><i>If you don't get along with your partner, you're not going to get very far.</i></p>
Real world skills/ Knowledge	<p><i>How to do circuitry because that could make up a real job.</i></p> <p><i>How to conserve energy by using solar energy</i></p>
Time Management and Organizational Skills	<p><i>I learned how to manage my time more effectively and ways to toy around with things I don't know about to learn what they do</i></p> <p><i>Time management is the most important thing I learned</i></p> <p><i>I learned that you have to stay organized in order to do things simple and easily.</i></p>

	Student Quotes
Problem Solving Skills	<p><i>How to work with our partner and not be told how to do everything. We had to learn it on our own.</i></p> <p><i>The most valuable thing that i learned is that sometimes when your working with a program it can be frustrating because you never used it before and you don't know what each tool does . i learned to never give on something just because it is hard. just keep on trying and you will figure it out sometime.</i></p> <p><i>That you always cant just get the answer. You have to figure a way to do it.</i></p> <p><i>How to work with our partner and not be told how to do everything. We had to learn it on our own.</i></p>
Persistence and determination	<p><i>How to work together and how to do a lot of the things I couldn't figure to how to do earlier</i></p> <p><i>That building stuff is really fun. And girls can do anything a boy can and I really enjoy that</i></p> <p><i>That you can do anything if you put your mind to it</i></p> <p><i>Don't give up and always look for solutions</i></p>

Students Overall Rating of the Intro to Tech Class

Students' overall rating of the Intro to Tech class was consistent across all cohorts. Nearly all of the students from each cohort (90%-95%) rated the class "good" or "great."

Table 8. Students' Rating of the Intro to Tech Class by Cohort

Statement	Fall 2010 (N=120)	Spring 2011 (N=117)	Full Year Cohort (N=32)
Needs Improvement	<1%	1%	6%
Satisfactory	4%	9%	3%
Good	28%	29%	28%
Great	67%	61%	63%

Clark County: FASTT Math Fact Fluency Software

Grant funds were used to support implementation of FASTTMath at 10 schools in Year 1 of the grant and 10 more in Year 2. The outcome data presented below represent 19 schools because one of the schools never started using the program. The implementation data are summarized from program-generated Implementation and Summary reports that evaluators received from the FASTTMath District Coordinator; feedback data are summarized from evaluator-administered surveys and face-to-face teacher interviews.

Students Enrolled by Operation

Although FASTTMath is designed for use by 3rd-8th graders, one school was allowed to enroll 2nd graders in the program. Among the 19 schools that used the program, over 2800 students were enrolled across grade levels. When enrollment is compared across operations, 3rd graders represent the largest percentage of students enrolled in the addition (45%) and subtraction (47%) operations; 4th and 5th graders make up the largest percentage of students enrolled in multiplication (54%) and division (78%).

Table 9. Number of Students Enrolled in FASTTMath by Operation

Grade Level	Addition	Subtraction	Multiplication	Division
2nd	67	34	1	-
3rd	1276	677	827	121
4th	411	430	1483	342
5th	544	267	1295	261
6th	165	22	661	2
7th	72	-	551	66
8th	321	-	366	3
	2856	1430	5184	795

Students Reaching Fluency

The FASTTMath program moves students through 0-12 math facts for each operation to which they are assigned. Fluency is determined based on the speed with which students provide the correct answer during timed drills. As shown in Table 10, on the following page, very few students achieved fluency in any of the operations. When expressed as a percentage of the number of students enrolled for each operation, the program-generated Summary Report shows that one percent or less of the students achieved fluency. While these data might lead the reader to conclude that the program did not work, examination of actual usage data by school site, shown in Table 11 (p. 28), provides evidence that while few students reached fluency, as defined by the software program, students who used the program as prescribed did show greater improvement over those who used it less frequently.

Table 10. Number of Students Reaching Fluency by Grade Level & Operation

Grade	Addition	Subtraction	Multiplication	Division
2nd	0	0	0	0
3rd	4	1	3	1
4th	1	0	10	1
5th	4	1	9	2
6th	0	0	7	1
7th	2	0	16	2
8th	0	0	9	2
Total	11	2	54	8
% of Students Enrolled in Operation	0.4%	0.1%	1%	1%

Table 11 (p. 28) shows that when students use the program as prescribed, (three or more times per week for at least 15 minutes each time) they have a greater increase in their current fluency compared to their baseline placement assessment. Five of the schools where students used the program in this way showed a 100% increase in the percentage of students who improved their fluency levels. For example (refer to the highlighted row in the Table 11), after taking the placement assessment, students at Craig Elementary School were determined to have about 25 percent mastery of their math facts. At the end of the 2010-11 school year, students who used the program three or more times a week had reached 54 percent mastery of their math facts, compared to students who had used the program less than three times per week reaching 40 percent mastery of their math facts. In another example, students at Hinman Elementary School who used the program as prescribed saw a 111 percent increase in mastery of their math facts compared to a 59 percent increase for students who used the program less than the prescribed amount of time.

To further illustrate the success of the program in helping students improve their math facts fluency, Table 11 shows that, on average, students who used the program as prescribed saw a 72 percent increase in their fluency growth rate compared to an average 37 percent increase in fluency growth for students who used the program less than three times per week. Based on data evaluators gathered during teacher interviews, one explanation for the low number of students determined to be fluent in a given operation is that students are not using the program for the following reasons: 1) limited access to computers to properly implement; 2) teachers' concerns about students losing instructional time; and 3) competition with other math programs teachers are already using. Other plausible explanations are students' limited keyboarding skills that make it difficult to enter their response quickly enough for the program to determine the student knows the math fact. Also, technical problems that teachers had with the program early in the school year (i.e., the server went down, problems enrolling new students, and the program forcing students to repeat operations they had already mastered) may have turned teachers off from using the program.

Table 11. Comparison of Average Improvement in Student Performance on Math Fluency Test by School Site and Frequency of Use

School	Used 3+ Times per week		% Difference between Placement and Current Assessment	Used <3 times per week		% Difference between Placement and Current Assessment	% Difference between 3+ Users and <3 Users
	Placement	Current*		Placement	Current		
Bryan ES	34%	53%	56%	38%	48%	26%	53%
Cortez ES	22%	44%	100%	28%	50%	79%	21%
Cortney JHS	37%	56%	51%	43%	49%	14%	73%
Craig ES	27%	54%	100%	25%	40%	60%	40%
Diaz ES	38%	44%	16%	39%	44%	13%	19%
Dooley ES	33%	61%	85%	31%	43%	39%	54%
Goldfarb ES	28%	36%	29%	29%	38%	31%	-9%
Hinman ES	28%	59%	111%	32%	51%	59%	46%
Kim ES	56%	78%	39%	39%	53%	36%	9%
Morrow ES	28%	66%	136%	38%	56%	47%	65%
Ober ES	54%	71%	31%	40%	50%	25%	21%
Piggott ES	22%	54%	145%	30%	41%	37%	75%
Roberts ES	34%	66%	94%	30%	53%	77%	19%
Robison MS	35%	60%	71%	40%	43%	7%	90%
Scherkenbach ES	45%	66%	47%	34%	45%	32%	31%
Smith, Hal ES	25%	35%	40%	24%	29%	21%	48%
Smith, Helen ES	35%	51%	46%	36%	42%	17%	64%
Stanford ES	40%	75%	88%	42%	54%	29%	67%
Taylor ES	29%	53%	83%	32%	47%	47%	43%
		Average	72%		Average	37%	49%

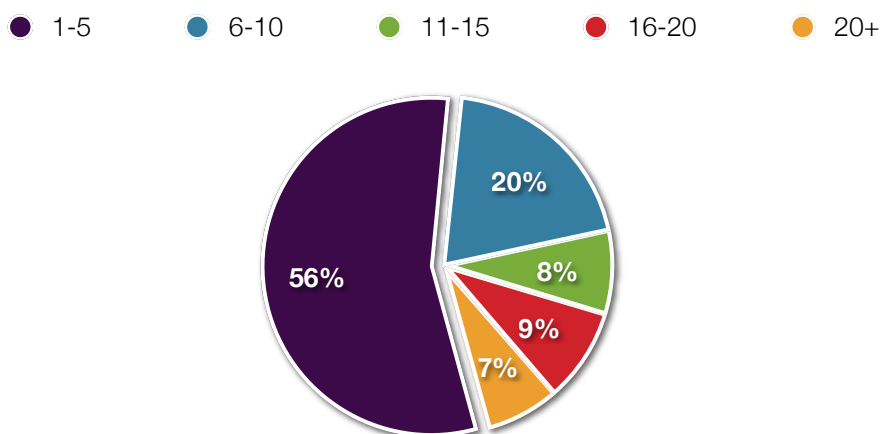
* Note that “current” refers to the most recent assessment as of the May report run.

Typical FASTTMath Implementation Strategy

Teachers were evenly split on the way in which they reported using FASTTMath; 43 percent said they cycle small groups of students through the program on available classroom computers and 45 percent said they take the whole class or large groups of students to the computer lab. Only three percent of respondents said they provide students access to FASTTMath before and after school, and a small number also combine classroom use with computer lab use. A few middle school teachers also said they utilize the 1:1 laptops provided by participation in the Nevada Pathway project.

Over half of the respondents (56%) reported that they have provided their students with instruction on how to use FASTT Math at home. Among these teachers, they estimate that between one and 32 of their students are using the software program at home.

Figure 3. Teachers' Estimate of the Number of Students Using FASTTMath at Home



Teachers' Satisfaction with FASTTMath

Teachers were asked to indicate their level of satisfaction with various expected outcomes of using the software. Over two-thirds of the teachers indicated that they were satisfied or very satisfied that FASTTMath increased student motivation to learn math facts (68%) and improved students' math facts fluency (66%). However, when asked about their level of satisfaction that using FASTTMath helped students with knowledge transfer, only 55 percent reported that they were satisfied or very satisfied that students were able to transfer math facts fluency to either their daily math work or to teacher-created assessments. Below are comments from teacher interviews in which they share their thoughts on the FASTTMath program helping students with knowledge transfer.

I have felt like a lot of my students who didn't know their facts going in are doing a lot better. I had some that I thought would move through a lot faster. I still have some on multiplication 2s , 3s and 4s. When we started out they were progressing pretty fast and now it's slowing down. I thought they would be able to transfer more into our every day lessons. Some can only do it in the fM setting. Some kids still have trouble. But the majority of the class is able to apply some of the facts, but the transfer isn't complete.

As for the fluency I think it's gotten better but I still want to see them make those connections. They know it discretely, but if you turn it around on them they can't do it as fast. They know 7x8 is 56, but if you ask them what is the relation of 56 and 7 they can't answer it.

I had one student who at placement only had mastered zeros and ones and now she's on 9's. It took all year but she moved along.

I would say with my fifth graders I see a transfer. Because they have a command of their multiplication facts it makes it easier to teach things like equivalent fractions and multiplication of fractions. Plus two-digit by two-digit transfer. To see that transition was amazing. With my fourth graders it took longer to see the transfer. I'm seeing it now because we've been doing it all year. We're going back to revisit long division and I see a difference because they're not searching for those numbers to use.





One of my lowest girls in math I noticed that she was really moving along. And then I asked if she was doing it at home and she said yes. Now she's in division. She's a bout a C student, but she's blowing it out of the water compared to my other students.

Recommending FASTTMath to Other Teachers


Most of the teachers (88%) said that they would recommend FASTTMath to other teachers interested in improving their students' math facts fluency, but some of these positive recommendations came with caveats. Teachers who indicated that they would not recommend FASTTMath also shared reasons why they would not do so. Among these were the amount of time it takes to implement use of the program. One teacher commented, "It is time consuming. For home use it is fine. When the students are taking 10-15 min. each, it takes a long time to get to every student. It also keeps them from what we are learning for a longer period of time." This seemed to be a common sentiment among teachers who were interviewed. Evaluators did not interview any teachers who adopted FASTTMath as a replacement for what they were previously doing to help students learn their math facts. Teachers who were required to allocate time to FASTTMath expressed some resentment that this requirement was infringing on their instructional time. Also some teachers did not feel that FASTTMath helped students any better than paper/pencil drills or other software programs that they were already using. To that end, teachers considered FASTTMath a supplemental program that they used because students liked to play the games.

Another caveat attached to recommending use of FASTTMath had to do with the type of computer upon which it would be used. Teachers whose students use FASTTMath on laptops feel that their students are at a disadvantage on the timed drills because the placement of numbers on the laptop keyboard is not the same as on an extended keyboard used with a desktop computer. These teachers felt that their students "languished" at lower levels for long periods of time, not because they did not know the facts, but because they were taking too long to identify the numbers on the keyboard. Keyboarding issues also seemed to be a problem for students in lower grades.

Comments in Favor of Recommending FASTTMath

-  *I have used other math programs in my class. I never saw the same level of excitement about math as I did when I started using Fastt Math. The students loved to play the games on the program.*
-  *This helps with automaticity and students like the program.*
-  *It provides the facts practice that I can't provide in class.*
-  *It's easy to use and it works.*

Comments Against Recommending FASTTMath

-  *I think it is trying to be too much. It is fine for improving fluency, but your implementation guide talks about using small groups, grouping, worksheets, reports, interventions at particular skill deficiencies; not stuff I have time for when this is just a fact practice program. I think it is probably too expensive for being really a glorified worksheet for unmotivated kids who won't practice at home. I already have a math program, several in fact, don't need another. If you want to be a comprehensive math curriculum, than do so, but no teacher has time for two math programs a day.*

- 💡 *This program is ineffective in improving student performance. Part of the problem may be that we use primarily laptop computers therefore numbers on keyboard slow the students down significantly.*
- 💡 *It works very well as long as you continue. I noticed during crts and we didn't have as much time they lost some of their facts.*

Summary of Outcomes for Investment in High Quality Content

SmartLab

The overall outcomes for the investment in high quality content were positive. In the case of the SmartLab implementation, the project director and the SmartLab Facilitator are pleased with the implementation of the Intro to Technology class and plan to continue offering the option of taking the course all year long for a small cohort of students. Notable outcomes for Churchill County include the following:

- 💡 By their own report, students have learned important 21st Century skills such as collaboration and problem solving
- 💡 The majority of students who took the class for a whole year indicated that they transferred the skills learned in the Intro to Tech class to their other classes
- 💡 The district is using county bond money to expand the SmartLab to the high school
- 💡 The district has been selected to pilot a proposed SmartLab implementation for elementary students

One of the project director's goals for the 2011-12 school year is to develop a final exam for the class in an effort to quantify student learning outcomes. In terms of long term sustainability, the project director's biggest concern is limited funds to replace the SmartLab computers in 3-5 years.

FASTTMath

It is fair to say that for as many teachers who had negative comments about FASTTMath, there were an equal number who liked it and expressed appreciation for having access to it as an added resource. In a request for final comments related to using the program, one teacher wrote, "Please let us continue the program for next year," and another wrote, " I really dislike this program and feel it is a waste of precious classroom time." Teachers' anecdotal data about students being upset if they did not get to use FASTTMath were matched against other teacher reports that their students were bored by the games. Given the available data points regarding FASTTMath implementation, evaluators believe that in subsequent years there will continue to be disparity in the extent to which teachers use the program. With evidence that using the program as prescribed does lead to knowledge gain for students, and knowing that some schools are better equipped and some teachers are more likely to use the program, evaluators recommend that Clark County consider transferring product licenses from schools that had low or no usage to schools that are interested in using the program and have the capacity to support the prescribed usage.

Professional Development

Structured, Face-to-Face Professional Development: Carson City, Douglas County, Washoe County

The outcomes for teacher professional development on the use of interactive whiteboards and other technologies varied depending on the structure of the professional development model. In Carson City and Douglas County school districts, teachers participated in sequential training sessions that continued to build upon their skill set. In between group training sessions teachers had support in the form of Site Trainers in Carson City and mentors in Douglas County. In Washoe County, the PD model, by circumstance of having just one trainer in the district, was to train as many teachers as possible; however, these teachers received fewer hours of training and did not have ongoing site-based support from other teachers. The availability of site-based support appears to be critical to the frequency and degree to which teachers use their interactive whiteboard. In Washoe County, most of the teachers who responded to the feedback survey were those that had been trained only in Year 2 as was the case with teachers in Carson City. The difference, however, in observed use between the two districts was stark. With teachers in all three districts rating their training very highly, the difference in outcomes does not appear to be the quality of the training or the trainer, as much as the availability of ongoing support from peers. In Carson City, Site Trainers provide just-in-time support to teachers and in Douglas County a cohort of teachers who were trained in Year 1 participated in a four-day training session that prepared them to serve as Level 1 trainers on the use of the Promethean Board and the ActivInspire software back at their school site. This level of support was not available to teachers in Washoe County.

Evaluators made site visits to all three districts where classroom observation and teacher interview data were gathered. Observation data reveal that teachers in Carson City and Douglas County are making use of their interactive technologies (SMART Boards in Carson City and interactive slates, student response systems, and whiteboards in Douglas County) at a more advanced level than teachers in Washoe County. To be fair, only three classroom observations were conducted in Washoe County because of last minute scheduling conflicts of which the evaluator was not aware until she showed up. However, during his interview with the evaluator, the project director expressed concern that teacher use of the whiteboards had not progressed much from Year 1.

Examples of Observed Teacher and Student Use of Interactive Technology

Carson City School District

Evaluators observed various uses of the SMART Board ranging from teacher lesson management (i.e., posting lesson objectives and vocabulary words) to teacher-directed instruction aided by SMART Board tools, to student interaction with the board. The ways that teachers used the board for instructional purposes included using it as a projector to display worksheets that were placed on the document camera, playing educational videos, using the “reveal” tools to make question and answer sessions interactive, and customizing the various games included with the SMART Board software to teach concepts. Below are short

summaries of some of the ways evaluators observed the SMART Board being used in elementary and high school classrooms.

In a high school classroom with students who have mild to severe mental disabilities, evaluators observed engaging uses of the SMART Board. These included student-guided use of tools and games to move through bell work such as the calendar activity in which students manipulate items on the board to select the date and day of the month. Students also went to the SMART Board to do a weather activity and a math counting game where they placed “coins” into a bank. The teacher in this classroom did an excellent job of integrating the SMART Board with students at varying ability levels. Two of the students in her class are non-verbal, but with the help of an aide they were engaged in the class activity. The students with mild disabilities were completely engaged in the lesson activities. They are comfortable using the technology and the teacher does very little hands on at the board, allowing students to manipulate interactive features of the SMART Board to move through the lesson.

In a 3rd grade class a teacher was observed doing a lesson on compound words. A clue (e.g. “a place to play at school”) was shown on the board and students had to write down the compound word on a sheet of paper. Then a student was randomly selected (using an embedded SMART Board tool) to come up to the board and “reveal” the answer. The teacher also used the board to project a Discovery Education video.

A similar activity was observed in a 1st grade classroom where the teacher used the SMART Board to assist in teaching sound recognition and spelling. The teacher had her lesson completely organized in a series of Notebook pages so when one activity was completed she was able to quickly move to the next activity by tapping the board to “flip” the page. The activities on the board corresponded with a workbook that students were using and included animated flash cards, audio “word sound” files, and an interactive assessment where students respond out loud to the question and the teacher slid the “finger detective” graphic across the board to reveal the answer.

Douglas County School District

Teachers were observed using the Promethean tools to actively engage students in lesson activities. Evaluators observed a great deal of comfort among teachers in allowing students to “take charge” of the lesson. Students, more than teachers, were observed interacting with the Promethean Board. Most notable in characterizing what was observed during the site visit was the seamless use of the various tools. Students knew which tools to use, how to use them, and when to use them. It was remarkable that teachers did not make a lot of announcements indicating a transition to another technology tool (e.g., “Now take out your responder). Instead teachers just taught their lesson and students were able to follow along and use the ActivExpression responders in the same way they might pick up a pen or pencil to take a test on paper. This high level of use was primarily observed in the classrooms of teachers who had participated in two years of training. The one teacher who was interviewed/observed that had only been trained during Year 2, had a more basic and teacher-directed use of the tools.

An evaluator observed a 5th grade social studies class in which students were reviewing the causes of the Revolutionary War. Students were in groups and each group had a turn to respond to questions displayed on the Flipchart review the teacher had developed. Each group discussed its answers and chose one student to

post the group's answer on the board. The evaluator noted that students' responses were not shared by tapping on an answer choice to "fill in the blank," but well thought out statements and explanations which they wrote on the board using the electronic pen.

One of the teachers who was interviewed and observed shared that she uses the ACTIVEExpression for evaluation and just in time data collection to re-teach concepts as needed and that she is able to transfer the data to Excel for later reflection on her teaching. She also allows students to take an active part in classroom routines and management by having them set up the various ways in which data will be displayed when they use the ACTIVEExpression. As a teacher who participated in Year 1 and Year 2 training she indicated that in the first year she felt that she was "searching for good material" to incorporate into her Flipchart lessons. She said that in Year 2 she altered her lessons to make them more interactive and collaborated with other grade level teachers to make her lessons better and take full advantage of the affordances of the technology. She reported that she spends over 20 hours per week working on Promethean Board activities for her students and shared that "The technology received from this grant is so important in my daily life. I use it daily to convey objectives and seamlessly move from one form of media to another."

Another example of the seamless integration of the Promethean tools was observed in a 6th grade class that was preparing for district testing. The teacher had stations set up in her room and at the Promethean Board students were interacting with a National Geographic website to identify various animals. Their task was to create vocabulary definitions, thinking maps and "big idea" notes, then teach the material to other students. They used the ACTIVEExpressions for review and testing.

The teacher who set up this learning activity participated in both years of training and was one of the teachers who completed the Promethean ActivInstructor PD. In her interview she indicated that having this technology has benefited every student in her class. The expert training and PD has helped her to constantly think about how to challenge her students. She said "I don't know how I ever taught effectively without this; I can never go back. I know where my students are every day in terms of their learning." She shared that after she got past the learning curve she felt completely comfortable allowing her students to take charge of their own learning; she has even taught them how to build their own Flipcharts. In reflecting on this transformation in her teaching she said, "The kids teach me and I have given up control and that is great."

Washoe County School District

Evaluators are limited in their ability to truly characterize the extent to which the Promethean Boards are being used in Washoe County schools because at the time the evaluator showed up for a scheduled site visit, teachers were unavailable for interviews and observations due to scheduling conflicts. During the site visit, the evaluator was able to observe only three teachers and the use that was observed was consistent with the project director's assessment that most teachers are low-level users of the equipment. Low level use is characterized as using basic features of the board and its interactive software in a teacher directed way, with little or no student interaction. The following description is indicative of the three classrooms that were observed; however, it should not be viewed as fully representative of teachers' use across the district.

An evaluator observed one teacher guiding students through an activity in which Scholastic News was projected on the Promethean White Board while the students followed along with hard copies of the same

content. Students had no interaction with the board during this activity. Instead they sat in their seats telling the teacher what to underline as the correct answer to the questions on their handout. Eventually they were called to the board to drag and sort animals based on the content of the readings in the articles. The rest of the class was asked to agree or disagree with the choice made by the student at the board who then tapped it to reveal if the answer was correct.

Highlights of Teacher Survey Data: Carson City, Douglas County, Washoe County

When asked how comfortable they felt using the interactive whiteboard in Year 2 of the grant compared to their comfort level in Year 1, 74 percent of the teachers indicated that they were “comfortable” or “very comfortable.” Nearly all of the teachers (90%) from Carson City, Douglas County and Washoe County school districts, who responded to the Technology Use Survey, indicated that they use their interactive whiteboard daily and nearly half of those respondents (49%) reported that they use the board more than half of a given class period. While teachers reported that students’ use of the interactive whiteboard is less frequent than their own use, 90 percent of teachers agreed or strongly agreed with the statement, “Students are using technology more this year than they did last year,” and 97 percent of respondents agreed or strongly agreed with the statement, “I am often looking for ways to increase students’ use of technology.”

Figure 4. Frequency of Teachers’ Technology Use in a Given Class Period

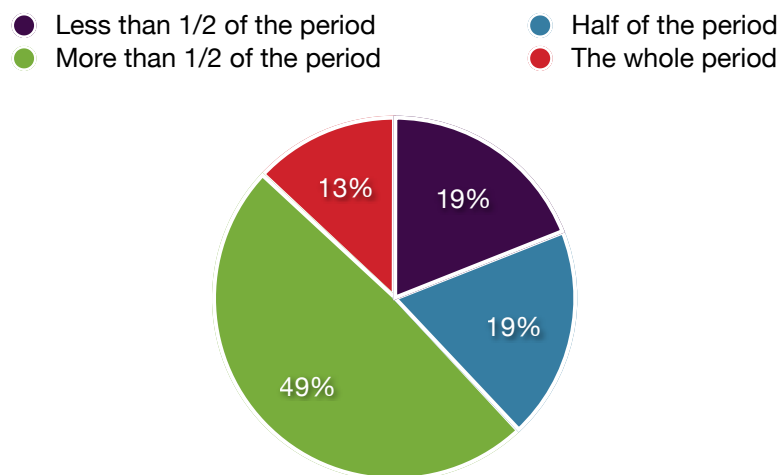
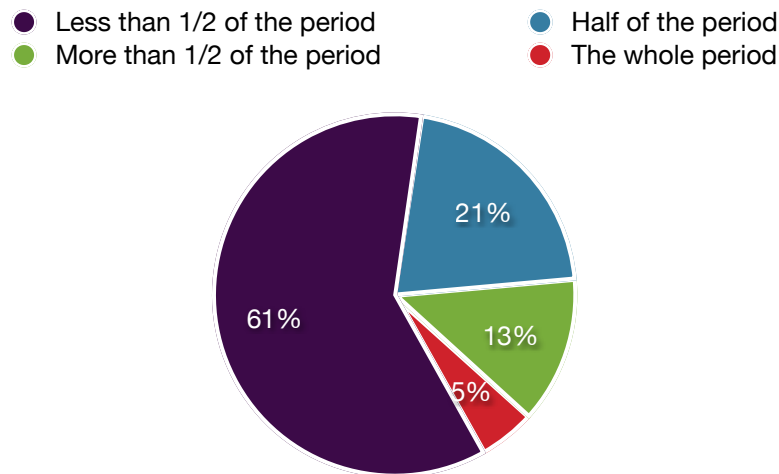


Figure 5. Frequency of Students' Use of Technology in a Given Class Period



The two features of the interactive whiteboard that the majority of teachers (90%) reported using with the greatest frequency were the electronic pens to write on the board and using the board to project websites and documents. Most teachers (83%) also reported that they use the tools and resources (i.e., interactive features, games, organization tools) embedded in the whiteboard software daily or at least a few times per week. Few teachers (35%) reported using the web-based resources available for their respective interactive whiteboard (i.e., Promethean Planet and SMART Exchange).

Table 12. Frequency With Which Teachers Use Various Features of the Interactive Whiteboard

Statement	%Daily/A Few Times a Week
Dry erase surface	53%
Projection of websites or documents	90%
Electronic pens	90%
Whiteboard software (i.e., ActivInspire, SMART Notebook)	83%
Whiteboard web resources (i.e. Promethean Planet, SMART Exchange)	35%

How Teachers Use the Interactive Whiteboard

The majority of teachers (84%) reported that they are using their interactive whiteboard as an organizational tool to present and reinforce learning routines and schedules. Many teachers in Carson City mentioned that they used the Notebook software to create organized files that have all of the information to which they want to link during a lesson. For example, teachers might have scanned documents, PowerPoint slideshows, and United Streaming videos all linked into one Notebook file. Teachers reported that they liked the efficiency of

being able to pull up saved files for activities such as bell work. This was also true of a teacher in Douglas County who shared that she creates and stores all of her lesson plans using Promethean Flipcharts and integrates them with standardstoolbox.com. When she opens a Flipchart lesson the state standards associated with the lesson automatically display on the board for students to see.

Table 13. Various Ways in which Teachers Use the Interactive Whiteboard

Statement	Response Percent
Presenting and reinforcing learning routines and schedules	84%
Facilitating individual or small group learning activities	60%
Utilizing flexibility to extend learning based on student generated ideas	60%
Engaging students in interactive learning games	75%
Testing for understanding/quick assessment	58%
Increasing supplemental content presented on a given topic/concept	79%
Differentiating instruction	72%
Saving class discussion notes for future use	62%

Evaluators asked teachers to indicate the extent to which they had made changes in their instructional practice as a result of the professional development in which they had participated. Most teachers (83%) reported that they had made “substantial” or “somewhat substantial” changes to their instructional methods. Sixty percent of teachers reported a change in the rigor of student activities, and 71 percent reported an increased use of technology to plan for differentiated instruction.

Teachers’ Feedback on Professional Development

Teachers in each of the three districts experienced their professional development in different ways. Carson City teachers were trained by SMART Board certified Master Teachers, Douglas County teachers participated in vendor-provided training as well as training provided by Washoe County, and Washoe County teachers were trained by the district’s PD Director. When asked to rate the quality of their training, on average, 90 percent of teachers indicated that it was of high quality. Teachers also agreed or strongly agreed that the difficulty level of their training was appropriate (94%), that they were able to immediately put strategies they learned in the training to use in their classroom (94%), and that participating in the training was a good use of their time (93%). Among those for whom it was applicable, 93 percent of teachers agreed or strongly agreed that the Year 2 training helped them build on what they had learned in Year 1.

Table 14. Teachers' Rating of Professional Development

Statement	% Agree/ Strongly Agree
The difficulty level of the training was appropriate	94%
The training was adequately paced	90%
The training was well organized	90%
There was an adequate balance between information gathering and hands-on activity	90%
Participating in the training was a good use of my time.	93%
The breadth and depth of the training content met my expectations	89%
The training helped me build on what I learned last year (n=47)	93%
The focus of the training was directly linked to new things I'm trying/would like to try in my classroom.	86%
The training provided me with strategies that I could immediately put to use in my classroom	94%
Overall, the training was of high quality	90%

Online Professional Development: Clark County, Elko County and White Pine County

TeacherLine Course Takers

In February 2011, evaluators administered two online surveys to Clark County teachers for whom grant funds had been used to reimburse them for TeacherLine courses they completed. The first survey was administered to teachers who had completed TeacherLine courses during the 2009-10 school year. The focus of the survey questions was on gathering information about how teachers were using what they had learned in the course(s) they had taken. The second TeacherLine survey was administered to teachers who completed TeacherLine courses in fall 2010; this survey included questions to gather feedback on the course experience. Over 100 teachers responded to the follow up survey (n=115) and 72 teachers responded to the feedback survey.

Number of TeacherLine Courses for which Reimbursement was Received

Over half of the respondents (52%) to the TeacherLine Follow Up Survey reported that they were reimbursed for one TeacherLine course during the 2009-10 school year. The remainder of respondents were reimbursed for two to six courses, with 41 percent of those reimbursements being for two or three courses. Three teachers were reimbursed for four courses, one teacher was reimbursed for five courses, and two teachers were reimbursed for six courses. Nearly three-fourths (74%) of the teachers reimbursed for TeacherLine courses in fall 2010 completed one course. Twenty one percent of teachers completed two courses, and the remainder completed three (2%) or four (2%) classes.

TeacherLine courses are offered in five main course categories: Instructional Strategies, Instructional Technology, Mathematics, Reading/Language Arts, and Science. The majority of respondents (44%) completed courses in Reading/Language Arts, followed by Instructional Technology (34%), Instructional Strategies (32%), Mathematics (20%), and Science (7%).

Continuing TeacherLine Professional Development

Evaluators asked teachers who took the Follow Up Survey if they had signed up for TeacherLine courses in the 2010-11 school year. Less than one quarter of the respondents (24%) indicated that they had done so. The main reasons that teachers gave for not signing up for another course were being too busy with school commitments (44%) and personal commitments (41%), and some teachers cited negative experiences with the course (i.e., trouble completing the coursework, not liking the instructor or how the course was run).

Table 15. Reasons Why Teachers Did Not Sign Up for TeacherLine Courses in 2010-11

Reasons	Response Percent
I was busy with school commitments.	44%
I was busy with personal commitments.	41%
I've already obtained my re-certification.	18%
I was taking other professional development.	17%
I didn't need/was not interested in any of the courses that were offered.	15%
I didn't know I could submit another tuition reimbursement	15%
I'm enrolled in a Master's Degree program.	6%
I don't like taking online courses.	0%
I didn't find my previous TeacherLine course(s) useful.	0%
Other (please specify)	9%
<ul style="list-style-type: none"> • Reached my goals for now • I was taking university classes required for my license • Finished all the credits I was working toward • I have had problems completing online course content • Teacher did not answer questions in a timely manner to complete course work, grade comments did not reflect assignment work, when mistakes were made and admitted grade did not change. • I got to my masters +32 pay grade. • I couldn't afford another class. • I really didn't like the way the course I took was run, so I am taking classes elsewhere. 	

Enhanced Skills and Knowledge

Most teachers indicated that the TeacherLine course(s) they took enhanced or greatly enhanced their skill and knowledge in many areas. In particular, 89 percent of teachers felt that the course(s) they took enhanced their ability to identify content appropriate resources and 85 percent reported that the course(s) enhanced or greatly enhanced their instructional methods. To that end, 93 percent of teachers reported that during the 2010-11 school year, they implemented strategies they learned in a TeacherLine course they took the previous school year.

Table 16. Teachers' Perception of the Extent to Which TeacherLine Courses Enhanced Their Skills and Knowledge (N=115)

	% Responding Enhanced/Greatly Enhanced
Instructional methods	85%
Ability to identify content appropriate resources to assist in lesson planning.	89%
Using technology to address students' learning needs.	83%
Strategies for planning differentiated instruction.	82%
Strategies for implementing and managing differentiated instruction.	80%
Theory-based understanding of your content area.	78%
Learning theory (i.e., how students learn) related to your content area.	83%
Improving student assessment.	81%

Below are some of the outcomes that teachers reported related to implementing new strategies learned in their TeacherLine course:

- 👤 Having a better understanding of students' capabilities
- 👤 Better scores on assessments
- 👤 Students gaining more thorough understanding of content
- 👤 Increased student engagement and enjoyment of learning activities
- 👤 Improved use of school computer resources
- 👤 Teacher collaboration around differentiated instruction
- 👤 Better student retention of course content
- 👤 Improved student writing

TeacherLine Course Feedback

Consistent with data gathered during Year 1, the great majority of teachers (93%) agreed or strongly agreed that their TeacherLine course was of high quality. An important aspect of any learning experience is the ability to receive feedback; 96 percent of respondents agreed/strongly agreed that their course experience included

adequate opportunities for feedback. Most teachers also agreed/strongly agreed that the course provided them with strategies they could immediately put to use in their classroom (92%), that the difficulty level of the course was appropriate (93%) and that participating in the class was a good use of their time (93%).

Table 17. Teachers’ Feedback on TeacherLine Professional Development (N=72)

Statement	% Agree/ Strongly Agree
The course objectives were clear.	92%
The difficulty level of the course was appropriate.	93%
There were adequate opportunities to ask questions.	94%
There were adequate opportunities to receive feedback.	96%
The feedback I received was useful.	93%
Participating in the course was a good use of my time.	93%
The breadth and depth of the course content met my expectations.	89%
The course provided me with strategies that I could immediately put to use in my classroom.	92%
Overall, the course was of high quality.	93%

Change in Teaching Practice

Evaluators asked teachers to indicate the extent to which they were making adjustments to their teaching since completing their TeacherLine course. In reviewing the responses, it should be noted that the teachers who completed this survey in February 2011 had just completed their course in December 2010. Given that timeframe, the percentage of teachers who reported making various changes to their teaching is remarkable. For example, about one-third of respondents reported that “on a regular basis” they were modifying their lessons to incorporate strategies they had learned in the class (31%), modifying their instruction based on strategies they learned (31%), evaluating the impact of the new strategies on students (29%), and seeking out additional information to build on what they had learned (35%). Less than 10 percent of respondents indicated that they were not currently making any of these changes, and between six and 11 percent reported that they were “considering” making these changes.

Elko County & White Pine County: Nevada Pathway Project

The Nevada Pathway Project is an online professional development program that consists of four training modules. Each module focuses on a different area and requires a 45-hour time commitment. The teacher participation incentive is either a \$750 stipend or three UNLV credits upon successful completion of each module. The topics for each module are as shown in Figure 6 on the following page.

Figure 6. Content Covered in Nevada Pathway Project Modules

Module	Content
Module 1: Building 21st Century Knowledge and Skills	<ul style="list-style-type: none">Curriculum MappingLesson Planning with NETS-S, TPACKExploring iPods and Web 2.0 Tools
Module 2: Setting Goals and Project Planning	<ul style="list-style-type: none">Writing Goal StatementsContent Area Unit PlanningWikis and BlogsRSSLearning CommunitiesProject-based Learning
Module 3: 21st Century Skills in Action	<ul style="list-style-type: none">Implementation of Action ResearchAssessment of Project Based LearningStudents as Consumers and Producers of ContentMaximizing the Potential of the Web, Social Tools, LiteracyCultural awareness, assistive technologyState Technology Conference
Module 4: Reflecting for Change	<ul style="list-style-type: none">Evaluating Action ResearchRole as a technology leader/21st Century teacherNevada themed projectPresentation to staff

Researchers at UNLV who are leading the evaluation of the Nevada Pathway Project made the survey data for the three participating teachers available to Wexford evaluators. Participants completed a survey prior to starting the Pathway Project modules and again at the end of each module. For the purposes of summarizing outcome data, Wexford only reviewed data from the baseline survey and the survey administered at the end of Module 4. The survey measures four constructs: teacher attitudes about technology tools, teacher attitudes about teaching with technology, self-efficacy related to technology, and Technology Pedagogy and Content Knowledge (TPACK).

When evaluators ran a T-test to look for any statistically significant difference between baseline and end-of-module-4 responses there was only one item for which a statistically significant difference was found. In the list of survey items related to Technology Pedagogy and Content Knowledge (TPACK), teachers' mean response to the statement "I have the technical skills I need to use technology" was significantly greater at the end of Module 4 than it was at baseline. There were no other pre/post comparisons for which a statistically significant difference was found; however, as shown Tables 18-21 on the following pages, there

were areas on the Module 4 survey where teachers' ratings of their attitudes and skills was greater than their baseline response.

Teachers also responded to open-ended questions each time they completed the survey. On the baseline survey teachers were asked to indicate the goals they had for participating in the Pathway Project. A summary of their combined responses is listed below.

- 👤 Learn to use new technology
- 👤 Learn ways to incorporate existing technology
- 👤 Learn how to use technology efficiently and effectively
- 👤 Increase student understanding based on teachers' use of technology
- 👤 Help students in their preparation for future careers
- 👤 I want to learn how to efficiently and effectively use the technology
- 👤 Learn from and share with colleagues
- 👤 Better understand 21st Century learners

Teachers' Responses to Open-Ended Questions at the End of Module 4

Teachers were asked to respond to three open-ended questions at the end of the Module 4 survey: List three things you think went well with the project, list three things you would improve, and list three things you learned. As shown in the figure below, teachers enjoyed collaborating with others, learning how to integrate technology, and learning how to use technology tools. In terms of what they would improve, teachers suggested having more time to learn fewer technologies, a focus on group projects, and changes to the communication structure (i.e. email versus only posting to the forum). When asked to list things that they learned after completing all of the modules, one teacher commented that she became aware of the technology that she did not like. All of the teachers commented on their increased knowledge of educational games and how to incorporate them into their instruction.

Question	Response
List 3 things you think went well with the Pathway Project	<ul style="list-style-type: none"> 👤 Building the web page 👤 Using technology in my classroom 👤 Learning about TPACK and 21st Century Learning skills 👤 Learning how to implement use of Flip cameras 👤 Collaborating 👤 Researching ways to incorporate technology 👤 Keeping everything organized for us!

List 3 things you would improve	<ul style="list-style-type: none"> More instruction on how to implement the technology we were introduced to. Less busy work. Being able to actually e-mail teachers rather than only posting to the forum. Less new technology at a time, but more opportunity to learn it well. More specific examples for use of iPods in high school science There were so many things to look at; I only had time to do half of them. More time spent on learning games Group projects Individual lesson plans - I would like to see more, more frequently.
List 3 things you learned	<ul style="list-style-type: none"> New technology How to incorporate the tech into lessons New tech that I don't like :) Effective use of Flip cameras Science Pirates - science games iPod use and resources Games - I used them before but I got to research others, which I enjoyed. Google maps

Comparison of Baseline and End-of-Module 4 Survey Data

Attitudes Toward Technology Tools

Teachers were asked to use a 5-point scale ranging from “not at all useful” to “extremely useful” to indicate the extent to which they felt various technology tools were useful as instructional tools. Teachers’ attitudes about the usefulness of Web 2.0 and multimedia creation tools increased from an average “moderately useful” on the baseline to “quite useful” on the Module 4 survey.

Table 18. Teachers’ Attitudes about the Usefulness of Technology Tools

Technology Tool	Baseline	End-of-Module 4
Presentation software	4.0	5.0
Word processing software	4.0	4.5
Spreadsheet software	4.0	4.3
Concept mapping software	4.5	4.5
Video playback tools	4.0	4.5
Educational games	4.0	5.0

Technology Tool	Baseline	End-of-Module 4
Online courseware	2.7	3.0
Instant message tools	2.5	3.0
World Wide Web	4.5	5.0
Website creation tools	3.0	3.5
Web 2.0 tools	3.0	4.0
Multimedia creation tools	3.5	4.5
Digital cameras	4.5	4.5
Probeware	5.0	5.0
Interactive simulations	5.0	5.0

Scale: 1=Not at all Useful, 2=Slightly Useful, 3=Moderately Useful, 4=Quite Useful, 5=Extremely Useful

Dispositions Toward Teaching with Technology

Teachers were asked to use a 5-point agree/disagree Likert-scale to indicate the extent to which they agreed with statements regarding their disposition toward teaching with technology. Teachers' level of agreement about the ability of technology to help students complete their homework and build online communities of students changed from an average "slightly agree" on the baseline survey to an average "strongly agree" on the Module 4 survey.

Table 19. Teachers' Attitudes about Teaching with Technology

Disposition Statement	Baseline	End-of-Module 4
Technology can help students learn	4.7	4.7
Technology can promote deep understanding	5.0	5.0
Technology can help students complete homework	4.3	5.0
Technology can help students locate information	4.7	5.0
Technology can help verify information	4.7	4.7
Technology can enhance communication	4.7	5.0
Technology should be central to instruction	4.3	4.0
Technology can facilitate planning	4.0	4.7
Technology enhances record keeping	5.0	5.0
Technology permits the free exchange of ideas	5.0	4.7
Technology can enrich instruction	4.7	5.0

Disposition Statement	Baseline	End-of-Module 4
Technology is an effective instructional support	4.7	5.0
Technology can build online communities of students	4.3	5.0
Technology can build online communities of practitioners	4.7	4.7
Technology can create inclusive learning environments	4.3	4.7

Scale: 1=Strongly Disagree, 2=Slightly Disagree, 3=Neither agree nor Disagree, 4=Slightly Agree, 5=Strongly Agree

Technology Confidence

Teachers were asked to rate their confidence in performing various technology-related tasks using a 5-point scale ranging from “not confident” to “extremely confident.” The notable differences in teachers’ rating of their comfort level with various technology skills/tasks include their baseline rating of “not confident” to “slightly confident” in using track changes in a Word document and utilizing distance learning tools compared to the “quite confident” rating on the Module 4 survey. Teachers also reported an increased comfort in creating interactive presentations, capturing digital video, and sharing audio files online. The two areas in which teachers ended up rating themselves as “extremely confident” on the Module 4 survey were creating a web page (baseline measure was “slightly confident”) and creating an electronic quiz (baseline measure was “moderately confident”).

Table 20. Teachers’ Confidence in Their Ability to Perform Various Technology Tasks

Technology Confidence Statements	Baseline	End-of-Module 4
Check email	4.7	5.0
Enter student grades	5.0	5.0
Locate information online	5.0	5.0
Create an interactive presentation	3.7	4.7
Send attachments	5.0	4.3
Resize a digital image	4.0	4.3
Capture digital video	2.7	4.7
Share an audio file online	3.0	4.3
Create web page	2.3	5.0
Start a video-chat session	1.7	3.7
Track changes in a Word document	1.7	4.3
Collaborate using a wiki	2.7	3.3
Utilize distance learning tools	1.7	4.3

Technology Confidence Statements	Baseline	End-of-Module 4
Use an interactive smart board	4.0	5.0
Create an electronic quiz	3.0	5.0

Scale: 1=Not Confident, 2=Slightly Confident, 3=Moderately Confident, 4=Quite Confident, 5=Extremely Confident

Technology Pedagogy and Content Knowledge (TPACK)

Teachers used a 5-point agree/disagree to respond to statements related to each of the six constructs that comprise the TPACK (Technological Pedagogical Content Knowledge) framework. Responses to each subset are presented in Table 21a and Table 21b, below. The data table is split only for formatting purposes.

On the baseline survey teachers indicated that they neither agreed nor disagreed with the statements “I keep up with important new technologies,” “I know about a lot of different technologies,” “I can choose technologies that enhance the teaching approaches for a lesson,” and “I can choose technologies that enhance students’ learning for a lesson.” Teachers’ level of agreement with these statements on the Module 4 survey was “slightly agree.” Teachers also went from slightly disagreeing to slightly agreeing with the statement “I have the technical skills I need to use technology.”

Table 21a. Teachers’ Agreement with Statements Related to TPACK

Knowledge Statement	Baseline	End-of-Module 4
Technology Knowledge		
I know how to solve my own technical problems	3.0	4.0
I can learn technology easily	4.3	4.3
I keep up with important new technologies	3.5	4.5
I frequently play around with technology	4.0	4.7
I know about a lot of different technologies	3.3	4.3
I have the technical skills I need to use technology	2.7	4.3
I have had sufficient opportunities to work with different technologies	3.7	4.3
Content Knowledge		
I have sufficient knowledge about [my content area]	4.7	5.0
I can use a “[my content area]” way of thinking	4.7	5.0
I have various ways to develop my understanding in [content area]	4.7	5.0
Pedagogical Knowledge		
I know how to assess student performance in a classroom	4.3	5.0
I can adapt my teaching based upon what students currently understand or do not understand	4.0	5.0

Knowledge Statement	Baseline	End-of-Module 4
I can adapt my teaching style to different learners	4.3	5.0
I can assess student learning in multiple ways	4.7	4.7
I can use a wide range of teaching approaches in a classroom setting	4.7	5.0
I am familiar with common student understandings and misconceptions	4.7	5.0
I know how to organize and maintain classroom management	4.3	5.0

Scale: 1=Strongly Disagree, 2=Slightly Disagree, 3=Neither Agree nor Disagree, 4=Slightly Agree, 5=Strongly Agree

Table 21b. Teachers' Agreement with Statements Related to TPACK

Knowledge Statement	Baseline	End-of-Module 4
Pedagogical Content Knowledge		
I know how to select effective teaching approaches to guide student thinking and learning in [my content area]	4.3	4.7
Technological Pedagogical Knowledge		
I can choose technologies that enhance the teaching approaches for a lesson	3.3	4.7
I can choose technologies that enhance students' learning for a lesson	3.3	4.3
My teacher education program has caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom	4.3	5.0
I am thinking critically about how to use technology in my classroom	4.0	5.0
I can adapt the use of the technologies that I am learning about to different teaching activities	4.0	5.0
Technology Pedagogy and Content Knowledge		
I can teach lessons that appropriately combine [my content area], technologies, and teaching approaches	4.0	5.0
I can select technologies to use in my classroom that enhance with a I teach, how I teach, and what students learn	3.7	4.3
I can use strategies that combine content, technologies, and teaching approaches that I learned about in my coursework in my classroom	3.7	4.7
I can provide leadership in helping others coordinate the use of content, technologies, and teaching approaches at my school and/or district	4.0	4.7
I can choose technologies that enhance the content for a lesson	4.3	4.7

Scale: 1=Strongly Disagree, 2=Slightly Disagree, 3=Neither Agree nor Disagree, 4=Slightly Agree, 5=Strongly Agree

Lincoln County: Technology Integration Specialists

Lincoln County school district expanded its grant implementation from one middle school in Year 1 to six schools (two middle and four elementary) in Year 2. The addition of new schools required hiring another part-time Technology Integration Specialist (TIS). Evaluators received the “Time and Effort” logs of the two TIS and used these data to quantify the amount of time they spent providing one-on-one support to teachers. In the Year 1 evaluation evaluators quantified this time and found that it was a small percentage of the TIS’s overall time. The Year 2 data are similar; however, in speaking with both TIS and teachers, evaluators feel it would be a misguided interpretation of the value of the TIS based solely on the one-on-one training hours provided. Teachers find the TIS extremely valuable as a resource for identifying relevant technology tools and resources, and are less likely to expect a lot of hand holding. In a needs assessment survey administered to teachers at the beginning of the school year, 58 percent of teachers disagreed or strongly disagreed with the statement, “I want my Technology Integration Specialist to touch base by visiting my classroom every time he/she is at the school.” Furthermore, 79 percent of teachers indicated that even when they don’t see their TIS they want to receive information from him/her by email and 85 percent agreed or strongly agreed with the statement, “I prefer to try and figure things out on my own first before contacting my Technology Integration Specialist for assistance.”

In interviews conducted during the site visit, teachers were complimentary of the timelines and relevance of the resources that their TIS shared with them. In some cases the TIS would take the initiative to research software and web-based programs based on his/her own observations of what the teacher was doing in the classroom and in other instances teachers would make direct requests. The TIS also served the roll of testing out various technology options and presenting the pros and cons so that teachers did not have to spend time doing that. The time that the TIS saved teachers was extremely valuable to them. As expressed by one teacher, “Help has been offered to help find resources...I don’t want more training, I want more resources.”

This type of support that Technology Integration Specialists provided is fully documented in their respective “time and effort” logs. In reviewing the logs, evaluators found that a good amount of time each week was spent researching technology solutions, whether it be for a technical or instructional use. Many entries indicate the TIS reviewing software or Web 2.0 tools to make a recommendation about the appropriateness, reliability, and ease of use, based on the teachers’ request. The following is a selected sample of entries from the Time and Effort Logs.

- 🕒 Set up e-mail accounts for teachers and administrators.
- 🕒 Set up teacher web pages on school website and sent out memo to teachers on how to update them.
- 🕒 Researched royalty free music options that students and teachers can use for visual presentations without violating copyright law.
- 🕒 Researched freeware options
- 🕒 Worked on PVES website and new website for PVMS journalism class.
- 🕒 Assisted in set up of Moodle accounts

- 🔊 Assistance in setting up Google Apps accounts (teachers and students used Goggle Docs and Google EDU email)
- 🔊 Researched Skype and other videoconferencing options
- 🔊 Researched ways to use technology in the school library

Table 22. Teachers' Attitudes about Working with a Technology Integration Specialist

Statement	Percent Agree/ Strongly Agree
I want my Technology Integration Specialist to check in with me regularly by email to see if I need help with anything.	55%
I want my Technology Integration Specialist to touch base by visiting my classroom every time he/she is at the school.	42%
I prefer to initiate contact with my Technology Integration specialist on an as-needed basis.	69%
Even if I don't see my Technology Integration Specialist regularly, I want to receive regular email from him/her with tips, ideas, resources, etc.	79%
I prefer to try and figure things out on my own first before contacting my Technology Integration Specialist for assistance.	85%

Although most of the teachers reported on the Technology Needs Assessment survey that they did not need to see their TIS every time he/or she was on campus, making regular classroom visits was part of the TIS job description. Below is a sample entry from one such site visit that depicts the TIS assessment of what she observed as well as reflections on how to provide follow up assistance. The teachers' names have been removed to protect their identity.

Teacher 1 – High level utilization of technology in her class. i.e. Edmodo for bell work exercise, overhead projector, class website, copy/paste into Open Office document, save in T drive, do work and save for grading. One area of potential is for digital storytelling. Shot email and provided hard-copy of sample material.

Teacher 2 – Working with old books that have no supporting material. His greatest desire would be for me to find him some text book options, primarily digital – for Physical and Earth Sciences and potentially Life Science. He printed up an assignment from internet materials and then created his own questions.

Teacher 3 – Used netbooks and the internet to pull up poems by Edgar Alan Poe and then had students read along as she played an LP record on "antique" record player. Very engaging. Her goals are to get a class website up and be able to provide content. If I can provide additional lesson material on poetry it would probably be appreciated.

Teacher Feedback on Technology Integration Specialists

The majority of Lincoln County teachers who responded to the Technology Use Survey agreed/strongly agreed that their TIS provided them with an adequate amount of one-on-one training (94%) and email support (94%), that their TIS regularly visits their classroom (88%), and is tuned in and responsive to their

respective technology integration needs (88%). Based on data from interviews conducted with the TISs, teachers' needs ranged from needing to set up Google Apps, learning to use Moodle, identifying online textbook solutions, and learning to set up and use Skype.

Table 23. Teachers' Feedback on Support Received by Their Technology Integration Specialist

Statement	% Agree/ Strongly Agree
My Technology Integration Specialist (TIS) provides an adequate amount of one-on-one training	94%
My TIS provides an adequate amount of email support	94%
I feel comfortable asking my TIS for help	94%
My TIS visits my classroom regularly	88%
My TIS is tuned in and responsive to my technology integration needs	88%

Summary of Outcomes for Investment in Professional Development

Structured, Face-to-Face Professional Development

The investment of ETIF grant monies to support teachers' professional development around the use of interactive whiteboards and other interactive technologies (i.e., teacher slate and student response system) yielded positive dividends for participants and subsequently their students. Though teachers are at various levels of implementation, overall, the investment can be viewed as a success. In Carson City, the many hours that the trainers put in to planning the seven SMART Board sessions as well as the subsequent support teachers received from their respective Site Trainer renewed teachers' interest in using the SMART Boards that had been in their classrooms in some cases eight to 10 years with little use prior to teachers taking the training. The interest in using the SMART Board also spread to teachers who did not participate in the training. A first grade teacher who was interviewed during the evaluator's site visit shared the following, "I think there is some expansion of use across the school. There are six 1st grade teachers and only two of us are taking the class, but we share a lot and all of the teachers are using it."

Douglas County did not use ETIF Grant funds to support teacher professional development, but the grant-funded investment in the Promethean suite of interactive products including the whiteboard, slate, and student response system, allowed the district to take advantage of PD opportunities. In Year 1 and Year 2, teachers participated in Promethean training at no cost to the district because the training was provided by Washoe County through an EETT grant. The district subsequently met teachers' interest in more training by submitting a proposal to a private funder and receiving a \$1,000,000 donation that helped send 12 teachers to a 4-day ActivInstructor training provided by Promethean. In addition to other vendor-provided training in which teachers participated, the 12 ActivInstructors served as mentors at their respective school site and provided training and support to teachers.

In using its ETIF Grant funds to support the district plan of putting interactive whiteboards in every classroom, Washoe County also had the PD plan to train as many teachers as possible in how to use the boards. Where

a core group of teachers in Carson City and Douglas County had in-depth training, the Washoe County model was focused on breadth, training more teachers than in either of the other districts. Over the course of the 2010-11 school year, the district's PD Director facilitated more than 100 hours of PD, in over 30 training sessions, many of them one or 1.5 hour training sessions offered on early release days or during PLC meetings. While teachers in Washoe County have received some whiteboard training, there is concern about the extent to which training opportunities will continue to be available. The district's Educational Technology Department was eliminated and the PD department was subsumed under the district's HR department. At the time interviews were conducted in May 2011, in addition to uncertainty about continued funding for his own position, the PD Director expressed concern over the HR Department's commitment to the ongoing professional development that he feels teachers need.

Online Professional Development

Teachers who participated in online professional development, either by taking a TeacherLine course (or courses) or completing the four Modules of the Nevada Pathway Project, were seeking to gain skills and knowledge to improve their teaching and expand learning experiences for students. In that regard, though the PD was different in terms of scope and sequence, teachers reported positive outcomes from their experience including: an increased use of technology, more thoughtful planning and efficient lesson implementation, and changes in student assessment practices. Most teachers also found the online format suitable to their learning style.

Professional Development Provided by Technology Integration Specialists

The Technology Integration Specialists in Lincoln County play an important and time-saving role for teachers. Teachers eager to take full advantage of the affordances of every student having an Internet-connected laptop, but short on time to find relevant tools and resources to integrate into their lessons, appreciate that the TISs do this heavy lifting for them and make recommendations regarding the feasibility of using the resources. Most often the TIS is recommending resources that teachers can immediately put to use in their classroom. As one teacher shared, "[The TIS] is great. She walks in and discovers that I'm using something that she didn't know I was using and she'll support me by looking into it and seeing how I can use it more and better...She's figures out the glitches and gets it all smoothed out for me."

While the teacher feedback on the support they received from their TIS is positive, there is still room to grow in terms of using the TIS for maximum benefit. The TIS who started at Meadow Valley Middle School in Year 1 reported that she did less tech support and had time for more one-one-one support of teachers in Year 2, but as one teacher who is part of the district-wide Technology Committee reported, for teachers new to the grant, most of the PD so far has been focused on technology skills rather than technology integration. This finding is supported by a statement made by the TIS who was hired in Year 2 to work with two of the expansion schools. He shared, "They [teachers] need to know how to do something and I go in and show them how to do it." Teachers have expressed a preference for figuring things out on their own before reaching out to the TIS for support; however, evaluators recommend that as the district expands the netbook program, it consider using the TIS to train teachers on the software that is installed on the netbooks, with an emphasis on how it, along with Web 2.0 tools can be used to support teachers' curriculum.

Pilot Project

Data gathered over the two years of the ETIF Grant indicate that Lincoln County School District was successful in implementing the pilot project outlined in its funded proposal. Lincoln County School District set out to build upon momentum at one middle school and expand its vision of providing 21st Century technology and learning opportunities to all students in the district. The means by which the district intended to do this was by building and supporting a 1:1 laptop program that included an “anytime/anywhere” learning component, which allowed students to take their laptop home. The plan also included supporting teachers’ integration of the laptops in their respective courses by giving them access to individualized, just-in-time support provided by a Technology Integration Specialist.

Implementation

The Year 1 implementation of the pilot project began with providing netbook computers to all teachers and students at Meadow Valley Middle School and hiring a part-time Technology Integration Specialist to support the teachers. Much of the first year was characterized by “learn as you go” trial and error related to building a wireless infrastructure, dealing with bandwidth issues, finding free software appropriate and sufficient to meeting learning goals and objectives, imaging computers, educating parents about the program and getting them on board with allowing students to take the netbooks home, establishing an acceptable use policy for using the netbooks, and training teachers. Building on lessons learned from Year 1, during the 2010-11 school year the district rolled out the 1:1 program in all of its 6th-8th grade classrooms. As the project director described in his Year 2 interview, “I think the model that we put in place worked well in terms of piloting here where we already had the support, where we were already actively working toward the 21st century approach. The technology just pulled it all together. We were able to address the parental support and address concerns that were there. We were able to develop policies and procedures so when it was time to expand in the second year it went a lot smoother at the other sites. They may not recognize it, but most of them took the work we did up front with policies.”

Challenges

Many of the challenges faced in implementing the pilot project are problems inherent to small districts. Primary among them is limited staff and insufficient expertise among available staff to efficiently address technology support issues. As described by the project director, “With the pilot we took care of a lot of things ourselves, when we expanded we didn’t have the expertise to address all of the concerns and issues. There was only so much we could ask people to do. People have many job responsibilities and only so much expertise.” To that end, the project director shared that “we are still figuring out some of the wireless issues as a district.” Also related to the issue of limited human resources is the use of the TIS in more of a technical support role than was originally envisioned. The new TIS in Pahrnagat Valley shared that he was drawn into a tech support role out of necessity. During his interview he stated, “It wasn’t in my job description to set up the netbooks and hand them out. But I did it anyway because the person whose job it is is a full time teacher and it would have taken too long.”

The district also faced, but is now, through other funding sources, addressing, bandwidth issues. Prior to giving every middle school student a netbook, the district had sufficient bandwidth to manage the extent to

which students and teachers were accessing the Internet. After the netbooks were in all of the classrooms, accessing information on the Internet took too long when everyone was trying to get on the network at the same time. Dealing with this issue required planning and communication amongst teachers to ensure that students could get online when they needed to.

As discussed in the Year 1 Interim Report, Lincoln County does not have the financial resources to install software such as Microsoft Office on all of the netbooks, so it has opted for low and no-cost software solutions. For the most part this is a smart and sensible solution, but it does create issues such as students doing paper/pencil work instead of typing on their netbooks because teachers do not know how to use Open Office. A few teachers commented that they want to use the netbooks more, but they “need time to figure out how to use it [Open Office] and figure out how it’s different from Word.” This was more so the case with teachers who started participating in the project in Year 2 than with teachers who participated both years and indicated that their students use the netbook for writing “all the time.”

To protect the netbooks the decision was made to install a program called DeepFreeze on all of the student computers. It is a program that reboots the netbook to its original configuration every time it is started. Students must constantly save their work to ThawSpace, which resides on a district server, to maintain access to their work. Anything that is not saved on ThawSpace is lost, which is a problem that students have encountered.

Outcomes

The obvious and most significant outcome is that students have technology in their hands and can use it when needed to enhance their classroom instruction and increase their involvement in project-based learning. With the exception of a few students whose parents will not allow them to take the netbook home, students have 24/7 access to the netbook. In class they use it to do research, develop projects using Web 2.0 tools, communicate with their teachers and peers using email and online collaborative tools such as Edmodo, and access their math textbook. When asked about how access to the netbooks has affected students, one teacher commented, “They don’t groan when I say it’s social studies time. They seem to be more excited.” The netbooks have also afforded the teachers and students access to resources not available in textbooks. The same teacher went on to say, “I don’t think I’m even going to pull out the science book next year. The Internet information is readily available, more accurate, and more hands on than with the book. I don’t have to say ‘here’s how DNA splits,’ on the computer they can actually see an animation.”

Teachers are moving students away from traditional paper/pencil work and note taking as well as the traditional “poster” created at the end of a unit to depict what students have learned. Teachers are using Moodle and Edmodo to allow students to build on what they are learning over the course of a unit, update and modify their projects, collaborate with peers, and share what they have learned not only with classmates, but with students in other countries. The following quote captures the renewed enthusiasm for teaching and learning that is facilitated by access to the netbooks.

It’s definitely changed the way I teach. I think I’m lucky because I was always sort of wanting my class to not be focused on the teacher, but focused on the kids. The netbooks have completely supported that. The students are working all the time and producing things. The netbooks have

made that very easy. I'm so excited about it that I'm considering a Masters degree in instructional technology. It connects the kids with what they're interested in. The kids are more comfortable learning on the computer. You give them a netbook and it just takes off from there, faster than a teacher can do it.

Another teacher shared that he planned to have students develop a portfolio using Moodle. "For NV history their entire portfolio will be on their computer. Their text documents, their maps, everything we do. It's a six week course. Moodle portfolio." Teachers also noted that having access to the netbooks has made the district increasingly more paperless. As described by this teacher, "A lot of their homework is now over the internet. We're not paperless completely, but any book assignment or quiz is all done online and they send it to me. The communication with students is the big difference. We've cut down at least 50% on papered homework."

In response to questions on the survey administered to teachers in May 2011, all of the teachers agreed or strongly agreed with the statement, "Students are using technology more this year than they did last year." The majority of teachers (94%) also agreed/strongly agreed that teacher collaboration and support for technology use had increased, that they have a good understanding of the best ways to use technology in their content area (81%), and that they are often looking for ways to increase students' use of technology (88%).

The most significant outcome of the pilot project is the growth plan approved by the district Superintendent. Based on teacher interest and the success of the pilot project the district is planning an expansion to 5th and 9th grade classrooms in the 2011-12 school year; state textbook money will be used to support the expansion. The students who were 6th and 8th graders during the 2010-11 school year will get new computers when they advance to 7th and 9th grade, respectively. Advancing 8th graders will keep their netbooks, and 5th and 9th graders will get new netbooks. To facilitate the expansion the district has developed a Technology Leadership Committee with representation from all schools in the district. As the project director described, "The Leadership Committee was formed for making decisions and centralizing what needed to be done [from an IT perspective] so people had some ownership and buy-in about what happens at their school." The project director feels strongly that addressing the technical support issues is critical to a successful expansion. "Tech support is the challenge because we can't expand our staff to address that need. So we developed a committee to figure out how tech support will work in the district."

Statistically Significant Differences for Students

The results of statistical analysis comparing students' responses on the baseline technology survey administered in October 2010 and the end-of-year survey administered in May 2011 reveal that students' technology skills improved significantly on 16 out of 25 indicators. Statistical analysis also revealed a significant increase in the frequency with which students used their netbook in three out of four core courses, and a significant increase in the frequency with which they engaged in seven out of 10 technology-related activities. The baseline and end-of-year mean for each item is presented in Table 24-Table 26, below. The final column of each table indicates whether the difference in the average responses is statistically significant. Table 25 is split for formatting purposes.

Students rated their technology skills using a 5-point Likert-scale ranging from “I don’t know what this is” to “I can do this well.” Frequency of use was measured on a 6-point scale ranging from “never” to “daily.” In both English Language Arts and social studies, students’ use of their netbook in class increased to an average of “once or twice a week.”

Table 24. Frequency of Students’ Netbook Use in Core Content Areas

Core Courses	Baseline	End-of-Year	Significant Difference?
Science	2.7	3.2	Yes
English Language Arts	3.5	4.1	Yes
Mathematics	2.9	3.1	No
Social Studies	3.2	4.2	Yes

Scale: 1 = “never,” 2 = “a few times a year,” 3 = “a few times a month,” 4 = “once or twice a week,” 5 = “almost daily,” 6 = “daily”

Some of the technology skill areas where students saw a significant increase in their ability include: using a video camera and video editing software, using spreadsheet data to create graphs, and creating a slideshow presentation. It should be noted that student computers do not have PowerPoint installed so students create their presentations with a free Web 2.0 tool called Prezi.

Table 25a. Students’ Self-Rating of Technology Skills

Skill	Baseline	End-of-Year	Significant Difference?
Enter information using proper keyboarding skills	4.1	4.0	No
Open, create, change, print, and save documents	4.2	4.4	Yes
Upload pictures from a camera into the computer	3.6	4.0	Yes
Use a video camera to capture video	3.9	4.3	Yes
Use video editing software to make a video	3.0	3.4	Yes
Attach a file to an email I want to send	3.8	4.4	Yes
Use a spreadsheet to do math calculations	2.7	3.5	Yes
Create a graph using spreadsheet data	2.9	3.5	Yes
Create bookmarks to save websites I want to return to later	3.7	3.9	No
Use online search engines to find information	4.3	4.2	No
Use keywords to narrow my online searches	3.7	3.9	No
Create a slideshow presentation	3.8	4.3	Yes

Scale: 1 = “I don’t know what this is,” 2 = “I can’t do this,” 3 = “I can do this with assistance,” 4 = “I can do this on my own,” 5 = “I can do this well”

Students also saw an increase in their ability to post messages to a blog or online forum, use wikis, and use interactive learning sites such as Moodle. These data are consistent with teachers' reports of the tools and resources students use in class and for homework.

Table 25b. Students' Self-Rating of Technology Skills (Continued)

Skill	Baseline	End-of-Year	Significant Difference?
Use desktop publishing software to create flyers, brochures, and newsletters	3.2	3.5	Yes
Use software to create a multimedia product with video, graphics, and sound	2.9	3.3	Yes
Use software to create web pages	2.7	2.8	No
Use USB devices such as memory cards or external drives	3.6	4.0	No
Use email for school assignments	4.0	4.4	Yes
Post messages to a blog or online forum	3.6	4.0	Yes
Use math software like Geometers Sketchpad	2.3	2.5	No
Graphics programs like paint, GIMP, or TUX	3.5	3.6	No
Use wikis	2.1	3.6	Yes
Create a podcast	2.6	3.1	Yes
Create a video podcast (vodcast)	2.5	3.0	Yes
Use interactive learning sites (i.e. Moodle) to take quizzes	3.2	3.8	Yes
Use skill building programs such as TUX Typing and TUX Math	3.3	3.6	No

Scale: 1 = "I don't know what this is", 2 = "I can't do this," 3 = "I can do this with assistance," 4 = "I can do this on my own," 5 = "I can do this well"

The frequency with which students reported using a search engine to find information on the Internet increased to an average of once or twice a week. Students also reported a slight increase in the frequency with which they create presentations and present them to the class.

Table 26. Frequency with which Students Engage in Technology and Learning Activities

In my classes we...	Baseline	End-of-Year	Significant Difference?
Work on individual projects	3.6	3.8	No
Work on projects in small groups	3.1	3.4	Yes
Use word processing software to write a story or report	3.3	3.5	Yes
Use a spreadsheet to enter and calculate numbers	1.9	2.2	No

In my classes we...	Baseline	End-of-Year	Significant Difference?
Use a spreadsheet to create graphs	2.0	2.3	Yes
Create a slide presentation and present information to the class	2.0	2.5	Yes
Use images, graphs, and videos to explain ideas	2.1	2.5	Yes
Communicate by email with friends, experts, and others about topics we are studying	2.4	2.3	No
Use a search engine to find information on the Internet	3.6	4.2	Yes
Use available technology to find solutions to real life challenges	2.8	3.2	Yes

Scale: 1 = "never," 2 = "a few times a year," 3 = "a few times a month," 4 = "once or twice a week," 5 = "almost daily," 6 = "daily"

Summary of the Outcomes for Investing in Lincoln County's Pilot Project

In proposing its plan to launch the 1:1 laptop initiative, Lincoln County was the only district that requested grant funds to support its technology needs across all five funding categories of the ETIF Grant, and therefore was the clear outlier among small districts that received an ETIF Grant award. While some technical aspects of implementing the project had to be overcome, overall, the outcomes for investing heavily in a small district have proven positive. Outcomes related to the investment include, not only the planned expansion to 5th and 9th grade in 2011-12, and subsequent years until all 5th-12th graders have a laptop, but also early signs that access to the netbooks is increasing students' access to 21st Century Learning opportunities (at school and at home) through the use of Web 2.0 tools and other Internet and computer resources that allow them to take notes, communicate with peers and teachers, develop projects, submit homework, access course content, and take online assessments. Without the ETIF Grant award to build a professional development, technical support, parent involvement, and 21st Century Learning model, Lincoln County may not have considered supporting a 1:1 laptop initiative that spans from elementary to high school.

The project director shared that the district is "able to do the expansion with less money because we've discovered what the critical components are. What we are supporting financially is the hardware, curricular support through the technology specialists, and tech support." The project director indicated that "We need to do the 21st Century stuff and have the teachers foster a different approach before we put the technology in," but, the level of interest and enthusiasm for putting netbooks in the hands of students is leading them to "just jump in with the technology." The development of the Technology Leadership Committee is an indicator of the commitment the district has in terms of ensuring that technical support issues, such as web filtering and imaging computers, are addressed early on so as not to hinder the implementation from an instructional standpoint.

Technical Services

In most cases, regardless of the size of the district, grant funds were used to replace computers that were well over five years old. In Year 2 Clark County School District utilized grant funds to place over 180 workstations and servers in schools with the greatest need. While the number of workstations purchased is minimal compared to the need across the district, the purchase nevertheless had an impact on students and teachers. As the project director noted, “It was really really helpful to put more servers out in the schools because those are very expensive infrastructure pieces to replace. Some that we replaced were 7-8 years old so replacing them impacted a huge number of students like 900-1000 kids and their teachers. That’s bang for your buck.” In Douglas County the project director was able to take advantage of special pricing deals that allowed the district to purchase additional equipment including ActivExpressions (student response system) for all of the teachers who did not get them in Year 2. As the project director shared, by getting a deal on the equipment, “the \$60K plus really gave us between \$80K and \$90K in buying power.”

In Humboldt County and Pershing County district funds were matched with grant funds to complete the district’s replacement plan for teacher workstations. The project director from Humboldt County said, “There is so much need for computers and technology. All of the computers were at least 5 years old. This year it would have been 6+ years.” Because of the district’s need for new computers, it has repurposed the old teacher computers for student use because “the student computers are over 10 years old.” The project director for Pershing County summed up her thoughts about the grant by saying, “The money did what we needed it to do and helped the teachers get what they needed.”

Overall, districts were able to use the Year 2 ETIF grant funds to meet their varied technical support needs. The project director in Storey County reported that the district had used its grant money to “replace some really old computers in the classroom that were 8 or 9 years old.” He stretched the grant funds to meet the technology need by purchasing refurbished computers at about half the cost of full-priced machines. In Esmeralda County the project director used grant funds to purchase iPads and laptops for students and teachers to support district plans to expand the Nevada Pathway Project technology implementation model to all grade levels. White Pine County also used its Year 2 grant funds to expand on its implementation of the Nevada Pathway Project by purchasing additional student laptops and iPods to create a 1:1 implementation model in the high school math teacher’s classroom.

Teacher Use of Grant-Funded Technology

Teachers in each of the districts that used grant funds to purchase hardware devices, were asked to complete a Technology Use Survey. The majority of teachers (85%) agreed/strongly agreed that the new technology increased their interest in doing more to integrate technology into the curriculum, increased the overall frequency with which technology is used during class (82%), and increased their overall productivity (86%). Over three-fourths of the respondents (76%) agreed/strongly agreed that the technology increased the time they spend on the Internet looking for content-specific resources.

Table 27. Teachers' Level of Agreement with Statements about the Use of Technology

Statement	% Agree/ Strongly Agree
The overall frequency with which technology is used during class	82%
The time I spend on the Internet looking for content-specific resources.	76%
The frequency with which I use a projector to display web-based or other information to the class.	73%
My use of presentation software to create slide shows for my class.	61%
The overall frequency with which students access the Internet during class.	68%
The frequency of student Internet research.	63%
My use of email to communicate with teachers, parents and/or students.	82%
My use of technology for administrative tasks	86%
My use of school and/or district-provided software programs	81%
My overall productivity	86%
My interest in doing more to integrate technology into my curriculum.	85%

Frequency of Teachers' Technology Use in a Given Class Period

Nearly half of the teachers who received new equipment (47%) reported that they use it less than half of a given class period and nearly two-thirds of the teachers (63%) reported that their students use it less than half of a given class period. There is slight variability in the latter statistic, when compared by district, presumably because some districts replaced teacher workstations, not classroom computers for students.

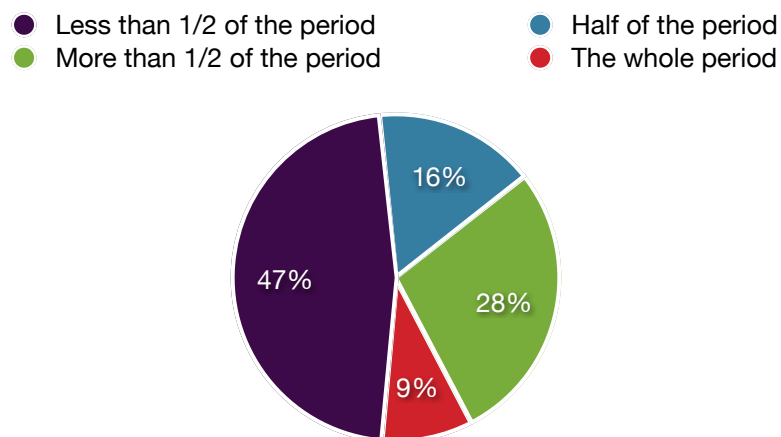
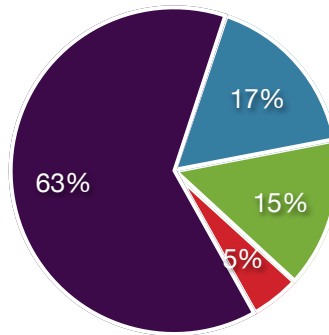
Figure 7. Frequency with which Teachers Use Grant-Funded Technology in a Given Class Period

Figure 8. Frequency with which Students' Use Grant-Funded Technology in a Given Class Period

● Less than 1/2 of the period ● Half of the period
● More than 1/2 of the period ● The whole period

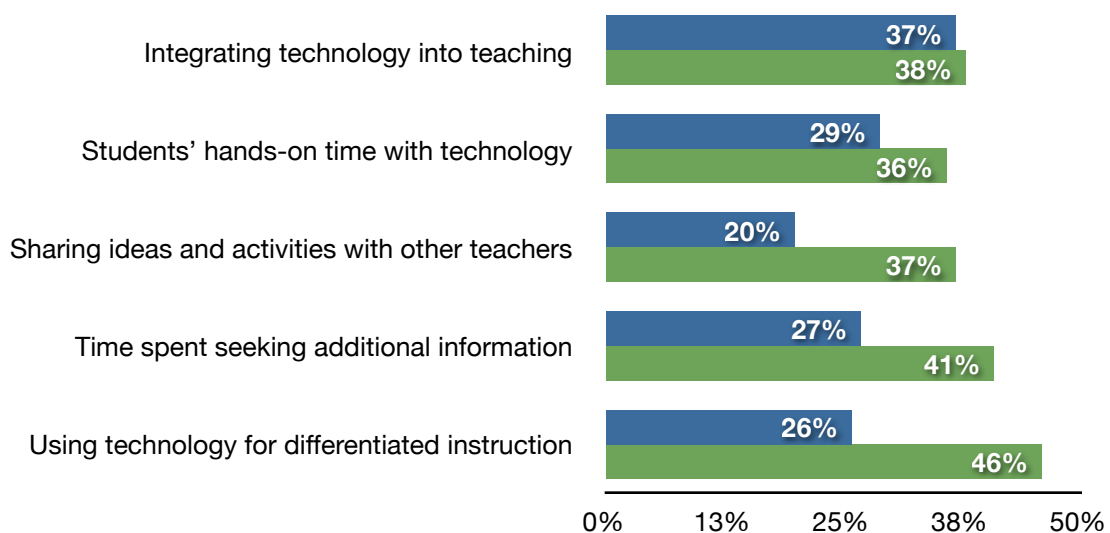


Changes in Teachers' Classroom Practices as a Result of Having New Equipment

Teachers were asked to indicate the extent to which they had made changes in their classroom as a result of having new equipment. The two areas where a greater percentage of teachers reported making substantial or somewhat substantial changes were integrating technology into their teaching (75%) and using technology to facilitate differentiated instruction (72%). Just over half (57%) of the teachers said they were sharing more with other teachers as a result of having the new technology.

Figure 9. Percentage of Teachers Reporting Substantial or Somewhat Substantial Change in Their Teaching Practice

■ Substantial Change ■ Somewhat Substantial Change



Teacher Quotes Expressing Changes in Teaching and Student Learning

Most significant TEACHING change related to having access to new computers

Clark County

- I can guide students in learning how to do research and give them additional resources for learning.*
- Having access to a new computer has changed the way I teach in that I try to find ways for the student to use the technology to create something that is related to what they are doing in real life.*
- I am able to access Internet and grade book much more quickly -- it does not take 20 minutes to boot up.*
- I am able to provide software-based interventions for students. I am also able to provide research time for students on many of our learning topics in Science and Social Studies.*

Eureka

- I am able to use virtual field trips and virtual business situations to meet class objectives.*
- I am able to access various sites to assist in the re-teaching and differentiating of instruction for my special education students to provide new and varied modes of teaching and learning difficult concepts.*

Humboldt

- My prep work and administrative tasks are much faster and easier to accomplish.*
- Having a newer and nicer computer makes all of my basic management of grades, attendance, and lesson planning easier.*
- The ability to search for new content area ideas and activities has improved my teaching.*
- The most significant change is my use of the related resources for my textbooks and making power point presentations in which to teach.*


Most significant STUDENT LEARNING change related to having access to new computers

Clark County


- Students have more and immediate access to information that they would not normally have. They have access to computer programs that enhance their learning as well.*
- Students are confident to navigate the web, type up reports with clipart or media files, and they are able to complete tasks in an efficient manner.*
- I feel that students are becoming more independent learners, and often branching off of the main subject to find more information. Students also share their work in different ways, which can help them understand different methods of doing something.*
- Students have the ability to practice reading and math skills on a regular basis and have improved their skill level.*
- Students are able to access more information, because they have more time due to the speed of the computers.*


Eureka

- Students can access and utilize web based programs and sites that provide more than one way of presenting and practicing new concepts. Additionally, we are able to use the computers to read books online via bookshare, an audible site that allows students with print disabilities to access thousands of books. The laptops allow them to listen to them anywhere, comfortably and privately.*

 *In math, we are able to review, step by step, difficult math concepts as many times as needed so that students can master the concepts and complete homework correctly. In writing, we are able to share, edit, and revise papers within and among the entire class.*

Humboldt

 *Students really have more access to Internet sites that serve their individual needs in reading and math. They feel more confident with the math curriculum this year than ever before.*

 *I have seen an increase in test and quiz scores because the students are receiving more visual representation of material.*

Summary of Outcomes for the Investment in Technical Services

The greatest expenditure of ETIF Grant funds was on technical services, and statewide, this investment had an impact on over 1100 teachers and 42,000 students. Districts used grant funds to address their immediate technology acquisition needs and in small districts this was sufficient to meet the needs of all teachers; in mid-sized districts the funds were often matched against other funding sources such as grants, bonds, and private donations, to complete a purchasing plan in line with the district's technology plan.

In Esmeralda County, the Mobi devices purchased with ETIF grant funds afford teachers the freedom to move about the room to “see a problem students are having and immediately jump back in the lesson and show them where they are missing a certain step.” This is something that teachers felt they were not able to do as frequently when they were teaching almost exclusively from the front of the classroom. Furthermore, the project director feels using Year 2 funds to purchase iPads will have a tremendous impact on district plans to increasingly integrate students' hands-on time with technology.

In Humboldt County, district funds were matched with the ETIF Grant award to provide every teacher in the district with a new computer. However, the district still faces some networking issues that affect teachers' ability to use the computers to their full potential. Given the district's network configuration, the project director stated that “the computers aren't slow, but they are limited to what they can do so that they don't run slowly. We are hopeful that with eRate funds in July [2011] we can move our schools to fiber optic so we don't have the network bandwidth issues.” Currently, because of limited bandwidth, sites that have Flash animation, and streaming video and audio (with the exception of United Streaming and Scholastic) are restricted.

In Pershing County, the project director indicated that she is satisfied with the grant implementation by stating that “the money did what we needed it to do and helped get the teachers what they needed. The teachers who were using iPods [in Year 1] are still using them and the eMints teachers got their computers upgraded. These were things that needed to be done.”

The project director in Storey County is pleased that grant funds made it possible to replace very old classroom computers. According to the project director and data from teachers, the computers are getting a lot of use. Although the district purchased refurbished computers, the project director expects the computers to last for at least 3-4 years before they need replacing.

In the largest district, Clark County, the infusion of technology made no less of an impact than that compared to smaller districts. Schools had a need and ETIF Grant funds were used to meet that need. To gather data

on the extent to which the technology investment had an impact on teachers and students, evaluators conducted a focus group with Educational Computing Specialists from Clark County schools that had received new grant-funded computers. The purpose of the focus group was to gather data directly from the ECS on teachers' and students' use of the new workstations. All of the participants indicated that the new computers were used daily or almost daily, which was a significant increase over the prior school year. One ECS was quoted as saying that in the past "teachers avoided using the older machines" because they were slow, unreliable, and the software they wanted to use did not run properly on them. Another ECS shared that "the speed of the old computers discouraged teachers from projects that incorporated pictures and videos" and another said, "the old computers were slow and elementary school students were not willing to wait."

The ECSs reported that the speed and reliability of the new computers had the following impact at their school site:

- 🗣️ [The new computers] changed they type of product for students to demo knowledge/master. [Now they are] able to use PowerPoint, video editing, brochures
- 🗣️ Now because of the new computers our lab is booked solid. That was not the case when we had [the old computers]
- 🗣️ Teachers are more willing to include technology
- 🗣️ Teachers want to be in the lab more
- 🗣️ Better access to video streaming websites

Additionally, ECS's from three of the schools that are not Title I said "this grant provided computers our school would never have had."

Providing teachers with the equipment they need is the first step, making sure they have sufficient professional development is the next step. On the Technology Use Survey, 74 percent of teachers who received equipment, but no PD, agreed/strongly agreed that they need technology-related professional development to make better use of the equipment they received.

Infrastructure

The ETIF Grant supported major infrastructure upgrades in Eureka County, Lander County, Lyon County, and Mineral County. The outcomes for this investment are, for the most part, positive; however, this was the one funding category in which the most negative teacher feedback was collected. The teacher data are only from Lyon County and Mineral County because Eureka County did not have its wireless infrastructure in place until late spring 2011 and evaluators determined that teachers would not be able to sufficiently comment on the impact wireless computing had on their classroom instruction. There are no teacher data from Lander County because none of the teachers took the Technology Use Survey that was administered in May 2011; evaluators believe there was a miscommunication about how and to whom the survey should have been disseminated.

As stated in the Executive Summary, Eureka County outsourced the job of configuring and installing its wireless network, which resulted in a full-year roll out. While it took the better part of the 2010-11 school year

to get the wireless configuration up and running at the district's three campuses, the project director reported that teachers are excited about having "hot spots" all over campus. As he described it, "They like the idea of grabbing the laptops and just being able to go anywhere in the classroom." Instead of a group of laptops connecting to an access point on the laptop cart, the laptops at each campus will be connected to a central system. The project director anticipates that the laptops will be used more frequently and for increasingly more activities now that connectivity is not a barrier to accessing the Internet.

Lyon County and Mineral County made investments to improve the speed and stability of their respective networks. The outcome of this investment from an IT perspective was something that both districts "needed desperately." Lyon County managed its upgrade in-house, but the upgrades to Mineral County's network were managed externally by Oasis Online, the company to which the district outsources its Technology Management.

Frequency of Teachers' Technology Use Relative to Infrastructure Upgrade

Teachers were asked to indicate the frequency with which they and their students use technology in a given class period. Almost two-thirds of the teachers reported that they (65%) and their students (63%) use technology less than half of a given class period since the network has been upgraded.

Figure 10. Frequency of Teachers' Technology Use in a Given Class Period Subsequent to Infrastructure Upgrades

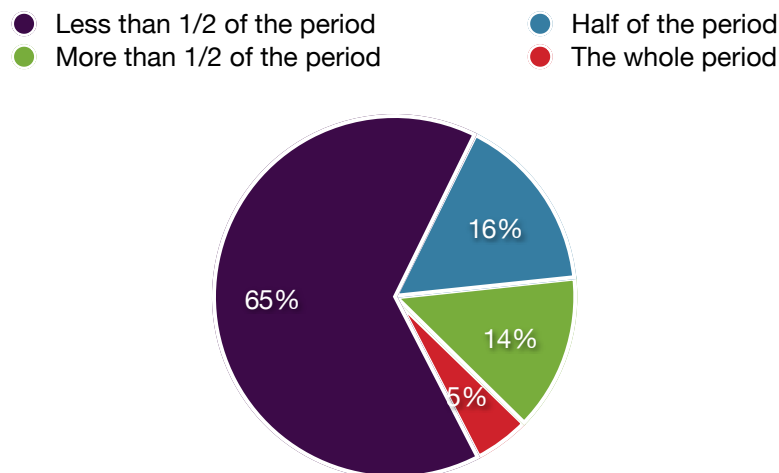
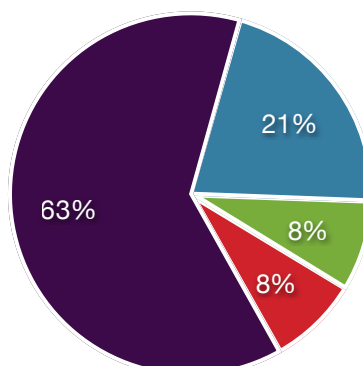


Figure 11. Frequency of Students' Use of Technology in a Given Class Period Subsequent to Infrastructure Upgrades

- Less than 1/2 of the period
- Half of the period
- More than 1/2 of the period
- The whole period



When asked about the impact the network upgrades had on their use of technology, most teachers (86%) agreed/strongly agreed that their use of technology for administrative tasks had increased and 79 percent agreed/strongly agreed that the upgrades increased their overall productivity. Fewer teachers were inclined to agree/disagree that the network changes increased the overall frequency with which they use technology during class (70%), the frequency with which students access the Internet during class (61%), or the amount of time they spend on the Internet looking for content specific resources (72%).

Table 28. Teachers' Level of Agreement with Statements about the Use of Technology

Statement	Percent Agree/Strongly Agree
The overall frequency with which technology is used during class	70%
The time I spend on the Internet looking for content-specific resources.	72%
The overall frequency with which students access the Internet during class.	61%
The frequency of student Internet research.	59%
My use of email to communicate with teachers, parents and/or students.	79%
My use of technology for administrative tasks	86%
My overall productivity	79%

When compared to teachers in districts where grant funds were used to purchase equipment, teachers in Lyon County and Mineral County were less likely to agree/strongly agree that the improved network had facilitated an increase in their use of technology. Table 29, shows comparative responses to illustrate this finding.

Table 29. Funding Category Comparison of Teacher Survey Responses to Statements about the Use of Technology









Infrastructure/Technical Services has increased...	Infrastructure	Technical Services
The overall frequency with which technology is used during class	70%	82%
The time I spend on the Internet looking for content-specific resources.	72%	76%
The overall frequency with which students access the Internet during class.	61%	68%
My overall productivity	79%	86%

Teachers in both counties had positive and negative comments to share related to the changes. Most of the negative comments were related to teachers' frustration with blocked access to sites that were previously accessible prior to the network changes. Positive comments from teachers were related to increased use of the Internet attributed to the speed and reliability of the network, decreased SPAM, better email communication between professional peers, use of Skype for video conferencing, and improved efficiency of administrative tasks.



Teacher Quotes Expressing Changes in Teaching and Student Learning

Most significant TEACHING change since the network was upgraded

Teachers Noticing a Positive Change

-  *I am able to do more and do it quicker.*
-  *At first it was frustrating for me as I would develop a lesson integrating technology, educational videos, tunes, games, etc., at home then only to find when I bring it up at school it would be blocked. The district has entrusted us to freely monitor the sites students now have access to. This is very helpful in bringing us to the 21st century.*
-  *The SPAM burden has diminished substantially.*
-  *I have less inappropriate material sent to me. I'm happy about that.*
-  *I am able to use the computer more and have students use the computers.*
-  *It is easier to get and receive e-mail communications between other teachers and professionals.*
-  *At the beginning of this school year, our network was so incredibly slow that I was unable to even take roll in a timely manner, not to mention use technology in other more innovative ways. I am now able to take roll and log onto the network consistently (previously also a problem).*
-  *I am able to use videos to show the relevancy of mathematics in real life and need less time for loading then it would have taken before the upgrade.*

Teachers Frustrated with Restricted Access to Websites

-  *We have fewer resources available due to stupid filtering of harmless sites.*
-  *The filtering doesn't allow us as teachers to pull up as much information, or video clips for our students. I find it more limiting than helpful.*

- 🗣️ *It is more difficult to have students online when so much has been blocked and I then need clearance from tech in order to move along. I get tired of playing a game of wait and see, so I don't use the computer as much as I would like.*
- 🗣️ *The technology that has been "Upgraded" in my classroom has made it almost IMPOSSIBLE to use the technology I was integrating into curriculum like the many years before!*
- 🗣️ *Teachers spending more time trying to get through the walls to access a site that they could access before the upgrade and also spending more time finding new sites that the system will allow through.*

To address teachers' concerns in Mineral County, the district, in collaboration with IT support from Oasis Online, developed a policy for releasing blocked sites. According to the Superintendent, it took the better part of the 2010-11 school year to establish the compromise position in which a teacher may request, with principal approval, that a URL be opened. Upon receiving the request, a network administrator from Oasis Online will make the content available on student and teacher computers; when YouTube video sites are released, they are accessible only on the teacher's computer. This allows the teacher to use the SMART Board to project the web content that he or she wants. The process of releasing blocked websites does not happen automatically, and therefore requires advance planning on the part of teachers. While this is a newly implemented policy, it does seem to be meeting teachers needs. As one teacher shared, "At first it was frustrating for me as I would develop a lesson integrating technology, educational videos, tunes, games, etc., at home then only to find when I bring it up at school it would be blocked. The district has entrusted us to freely monitor the sites students now have access to. This is very helpful in bringing us to the 21st century."

Most significant STUDENT LEARNING change since the network was upgraded

- 🗣️ *I believe it is the experience and knowledge students receive when they watch educational videos (weather, animal behavior, or such) that the lesson otherwise is not able to produce. Some students are visual learning and having the option to show a video is a great benefit to the students.*
- 🗣️ *They are able to navigate through information quickly and do not seem to get as frustrated by loading delays.*
- 🗣️ *Students can easily access their online record keeping assignments that are required for my classes.*
- 🗣️ *The students have better access to the electronic card catalog for the library.*
- 🗣️ *Students are able to get instant feedback to their learning as well as be able to see images, pictures, and videos of current events. It has also allowed students to participate in online sites*
- 🗣️ *Students can access to what they need more directly without having to search through so much indirectly related material.*
- 🗣️ *Students are able to log into the computers without pop-ups.*
- 🗣️ *Students know specific sites where they can obtain information on various topics. Some students are more comfortable using the technology than their teachers.*

Summary of Outcomes for Investing in Infrastructure

From an IT perspective the investment in upgrading districts' infrastructure achieved the objective of providing students and teachers with secure, reliable, and fast computing capabilities. From the perspective of some teachers, this came at a cost, namely an increase in restricted websites. Mineral County addressed

these concerns by creating a process by which teachers can request that sites be opened on their computer, though not on students' computers.

As with other districts, Mineral County School District was able to use the ETIF Grant to set the foundation for growing its technology plans. The superintendent indicated that in using its ETIF Grant for infrastructure the district could now focus on the instructional uses of technology. With funding from other grants the district purchased iPods and Android tablets for students, and is installing wireless access points so that each campus has full wireless connectivity. Because the cost of its servers was less than expected, Mineral County was able to purchase an additional server, which provides infrastructure for the whole district, without having to look for another funding source to purchase the third server. There is concern, however, that in five years the district will not have funds to purchase new servers again. The superintendent describes the district's budget as "bare bones" and shared that "funding opportunities like this are invaluable for little districts like Mineral. It's the only way we can get technology."

Lyon County's project director rated his satisfaction with the grant implementation a "12" on a scale from 1-10. He shared that because of the improved stability of the network teachers were using it so much that the district ran into a bandwidth issue. Bandwidth issues had not been a problem prior to upgrading the network because, according to the project director, teachers tended to use the network a lot less frequently due to its unreliability. As a result of the upgrade, teachers began increasingly accessing streaming video, which slowed down the network. According to the project director, "They are using it more and now it's slow again. They were trying to use some software and we didn't have enough bandwidth. The network infrastructure improved but then our Internet bandwidth was not enough, but now that's being addressed." The district received eRate funds that it will use to increase bandwidth for classroom computing. Currently classrooms have one wireless drop with bandwidth ranging from 10-45Mbps. eRate funds will increase the number of drops to four per classroom and provide wireless connectivity throughout all of the schools at the increased speed of 100Mbps.

Recommendations

Wexford Institute offers the following recommendations to the Nevada Department of Education and the Nevada Commission on Educational Technology as suggested considerations should the state award competitive educational technology focused grants in the future.

- 👤 Support cross-district collaboration by hosting a virtual post-award grantees meeting to facilitate information and resource sharing so grantees can benefit sooner rather than later from others' lessons learned in implementing similar projects.
- 👤 Continue to support grantees via the monthly calls hosted by Dr. Kim Vidoni. Project directors expressed appreciation for these meetings and one person indicated that they were invaluable as they created a forum "for the little guys to be able to hear what the big guys were doing."
- 👤 Ideally, include a requirement in future competitive grant RFPs that a percentage of the grant award be used toward technology-related professional development. Alternatively, ask grantees to show evidence of matching funds to support professional development related to their ETIF proposal. In addition to having applicants agree with a compliance statement, proposals should include a professional development plan.
- 👤 Develop a template for and require grantees to submit a quarterly progress report to identify successes and barriers to implementation. Rather than being punitive, this quarterly status check will facilitate grantees' requesting budget amendments should it be determined that some post-award plans are not feasible.
- 👤 Consider allocating more funds to fewer districts over a longer period of time. Lincoln County serves as an example of the district-wide impact larger awards can have for small rural districts that would not otherwise be able to implement full-scale technology reform.

Part Four: District Implementation Summaries

Carson City

Year 2 Grant Activities

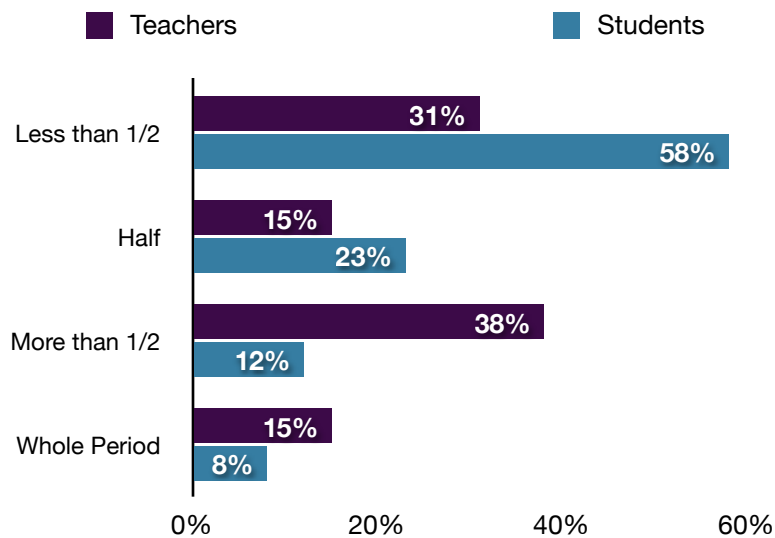
Carson City School District used its Educational Technology Implementation Fund grant to continue supporting its SMART Board professional development program. The Year 2 training program included the implementation of two additional training sessions and the inclusion of high school participants. The district also allocated funds toward the purchase of new computers for teachers participating in the training program. Being able to purchase the new computers met a critical need for the district because the project director indicated that “a lot of our workstations were pushing toward 7 years old and didn’t have the memory to work efficiently with the SMART Board. It was good that we had the money to replace the workstations.”

With Year 2 grant funds, a total of 19 high school teachers, two middle school teachers, and 29 elementary school teachers participated in one of three training sessions. During Year 1 sessions were offered concurrently at multiple campuses. In Year 2, all sessions for elementary and middle school teachers were offered at one elementary school and all high school teachers were trained at Carson HS. The training was expanded from four sessions in Year 1 to seven sessions in Year 2. The increased training sessions were designed to provide advanced training for teachers who returned from Year 1 as well as to provide teachers with increased opportunity to practice what they had learned and benefit from focused support from Master Teachers. Each session was 3.5 hours long and included 90 minutes of direct instruction followed by two hours of hands-on exploration. Each teacher, whether new to the training program or returning from Year 1 was required to participate in the “Stop and Share” session, in which each teacher presented two SMART Board lessons they had done in their class. Teachers were required to complete five sessions (17.5 hours of training) in order to receive a thumb drive with all of the lessons created by participants, one professional growth credit, and one recertification credit.

Highlights of Technology Use Survey Data

At which grade level do you teach?	
Answer Options N=26	Response Percent
Elementary	92%
Middle School	4%
High School	0%
Middle School & High School	4%

Frequency of Teacher and Student Use of Technology in a Given Class Period



Professional Development Feedback

Indicate your level of agreement with the following statements.

Answer Options
N=26

Percent
Agree/Strongly Agree

The training objectives were clear. 96%

The difficulty level of the training was appropriate. 92%

The training was adequately paced. 92%

The training was well organized. 92%

There was an adequate balance between information gathering and hands-on activity. 96%

There were adequate opportunities to ask questions. 96%

There were adequate opportunities to receive feedback. 96%

The feedback I received was useful. 96%

Participating in the training was a good use of my time. 92%

The breadth and depth of the training content met my expectations. 92%

Indicate your level of agreement with the following statements.

Answer Options
N=26

Percent
Agree/Strongly Agree

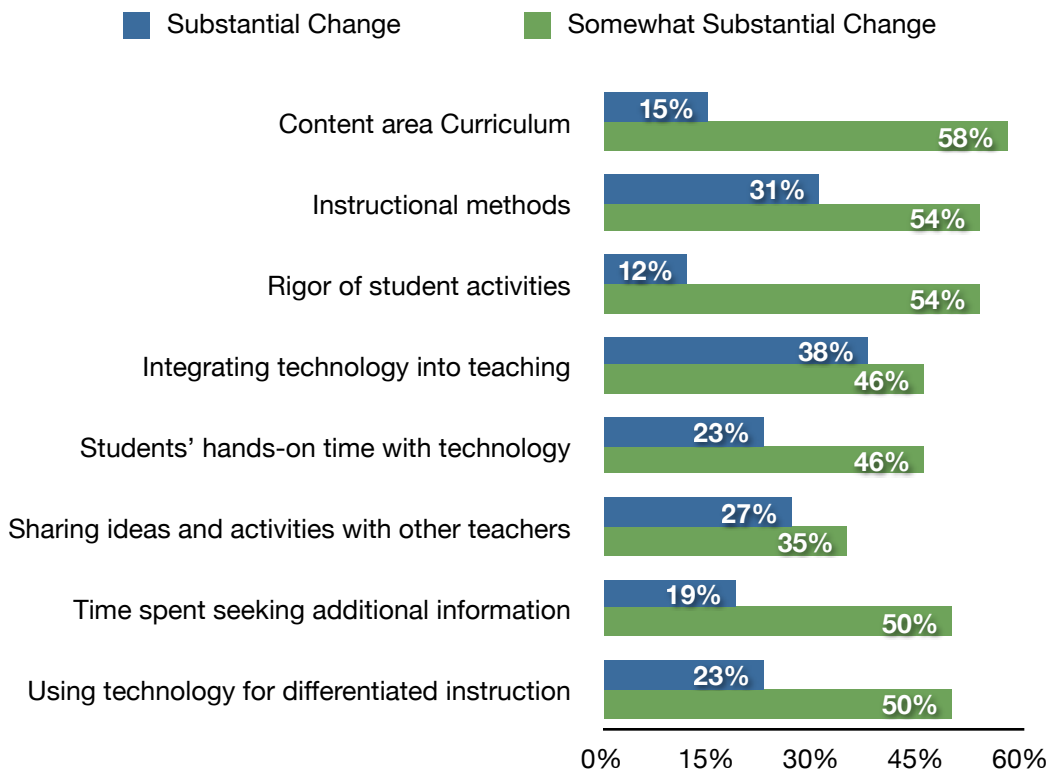
The training helped me build on what I learned last year. 95%

The focus of the training was directly linked to new things I'm trying/would like to try in my classroom. 92%

The training provided me with strategies that I could immediately put to use in my classroom. 96%

Overall, the training was of high quality. 92%

Changes in Teaching Practices as a Result of Participating in the SMART Board Training



Teachers' Perceptions about the Use of Technology

Indicate the extent to which you agree with the following statements.

Answer Options
N=26

% Agree/Strongly
Agree

Students are using technology more this year than they did last year. 96%

Indicate the extent to which you agree with the following statements.

Answer Options N=26	% Agree/Strongly Agree
I feel I have the necessary skills to teach with technology.	92%
I feel I have a good understanding of the best ways to use technology in my content area.	88%
Most times I am able to answer students' questions about the technology we are using.	96%
I am often looking for ways to increase students' use of technology.	96%
Teacher collaboration and support for technology use has increased.	88%

Most significant teaching change related to using the SMART Board

- 👤 Becoming more efficient (i.e., creating lessons and saving them for later use)
- 👤 Increased comfort level in using the SMARTBoard
- 👤 Better, more effective lessons
- 👤 Ability to differentiate instruction to meet students' learning needs
- 👤 Accessing more resources
- 👤 Trying new approaches to teaching and using technology

Most significant student learning change related to using the SMART Board

- 👤 Increased student engagement
- 👤 Improved student retention of content
- 👤 Increased confidence and proficiency in the use of technology
- 👤 Increased student participation in learning process

Highlights of Teacher Interview Data

When asked to describe the motivating factor for taking the SMART Board training, teachers' responses ranged from wanting to "learn the interactive parts to keep the kids engaged," to wanting a "refresher" to update skills that had gotten "rusty." Other teachers were motivated by the efficiency afforded by the SMART Board. As one teacher stated, "I got tired of writing on the board and erasing it every day and then writing it again the next day. Now I can do some things at home and put it on the flash drive and then bring it into the class." Another teacher wanted to take the training because her co-teacher is a proficient user and she "wanted to be at her level."

The teachers who returned for a second year of training indicated that they signed up for the classes in order to have “time to work” on SMART Board lessons as well as to learn skills that they did not “completely absorb or didn’t remember or master” during the first round of training.

Site Trainer Interviews

Site trainers were asked to characterize the types of assistance they provide teachers. Those who were working with teachers that participated in both years of training reported that they provided more “how do you do this?” support, as teachers in their second year of training tended to be more confident and capable of doing their own troubleshooting. Those who worked with teachers in their first year of training said they were providing more technical support such as doing software updates.

Site Trainers reported that a benefit of their position was that it allowed them to spend more time on their own lessons as well as learning by answering other teachers’ questions and seeing the lessons that they developed. They also said that being a trainer increased their confidence in using the board and increased the depth of their use. One teacher shared, “Just because I’m the computer teacher doesn’t mean I always used it to its full advantage. I think I was maybe using a small percentage of the capability and now I use it a lot more.” Below are some of the other comments teachers shared about the training.

It’s probably the best teacher training that I’ve gone to. And a huge part of it is the work time they build in. So many times you go to a workshop and they show it to you and then you get back and don’t know what to do with it. But we actually sit there and work on it and get to build things.

[We need] a PD day just so we can develop lessons. The Sit & Soaks were really good because you could hear the discussions about how [other teachers] could adapt things for their own grade level.

The thing that our district needs to hunt for is to have the upkeep of the tools and all that it needs. The SMART Boards are in round one of SMART Board and they’re older and they need to be replaced. The projectors need to be replaced because the bulbs go dim. How can the district write into the grant...now that we have all of this wonderful training and tools, that we can keep them?

Project Director & Project Coordinator Perspective

The project coordinator sees “the fact that they [teachers] wanted to take the class again for five Friday nights” as a clear indicator of the success of the training program. According to the project coordinator, who is also one of the Master Teachers, the teachers who returned for a second year of training “are into the stage of adapting instead of adopting. You hear them talking about curriculum application more than talking about frustrations about not knowing how to use the tool.”

The project director attributes the success of the training program to the strength of the trainers. “Because our trainers were so strong, that was a critical component. We relied on them to roll it out and counted on their expertise. Because they did such a good job the program went really well.” Upon reflecting on observations he has made in classrooms, the project director said, “I’ve noticed that they are using it as a smart board and not just a whiteboard or a projection board. I’m seeing this across content areas.”

In terms of sustaining what was accomplished with the grant, Carson City passed a bond that in 2013 will provide funds to update the equipment.

Churchill County

Year 2 Grant Activities

Churchill County continued to offer its Intro to Technology class for 8th grade students at the junior high school. The class uses the SmartLab STEM-based curriculum which the district purchased with ETIF Grant funds. In the class students work in pairs to move through a series of 15 engagements. The role of the Facilitator is to ensure that students have the tools they need to complete the engagements, but most of the class, after the Facilitator provides the students with an orientation to the course, is student guided. Student manage their progress through the engagements using the web-based portfolio that is part of the SmartLab package. Each day students are required to write daily objectives, update their ePortfolio, and write a summary of what they learned.

At the end of Year 1, the assistant principal at the junior high, along with the SmartLab facilitator, decided to offer a year-long course to a select group of 8th graders. Recommendations were provided by content-area teachers as well as the computer teacher and a cohort of incoming 8th graders was selected to pilot the year-long elective during the 2010-11 school year.

Highlights of Student Survey Data

Students' Feedback on Intro to Tech Class Partnerships

Indicate how much you agree with the following statements.			
Answer Options	Percent Who Agree/Strongly Agree		
	Fall 2010 (N=120)	Spring 2010 (N=117)	Year Long Cohort (N=32)
I enjoyed working with a partner.	86%	81%	84%
I had a good partner.	84%	81%	78%
I was a good partner.	88%	85%	81%
I want to do more work with partners in my other classes.	72%	59%	69%
I learned more from the engagements by working with a partner.	73%	73%	66%

Students' Opinions about Various Aspects of the Intro to Tech Class

What is your opinion about the following aspects of the Intro to Tech class?			
Answer Options	Percent Who Liked/Liked A Lot		
	Fall 2010 N=120	Spring 2010 (N=117)	Year Long Cohort (N=32)
Writing daily objectives.	38%	27%	38%
Building your ePortfolio.	53%	40%	44%
Writing a summary of what you learned in the engagement.	31%	24%	19%
Having to come up with your own solution to problems.	55%	55%	53%
The technology you got to use.	90%	93%	91%

Frequency of Students Transferring Problem Solving Strategies for Use in their Science Class

How often did you use the problem solving strategies you learned in the Intro to Tech class in your science class?			
Answer Options	Not at all	A few times	Many times
Fall 2010	24%	54%	22%
Spring 2011	27%	53%	20%
Full Year ('10-'11)	22%	38%	41%

Students Overall Rating of the Intro to Tech Class

What is your overall rating of the Intro to Tech class?			
Answer Options	Fall 2010	Spring 2011	Full Year
Needs Improvement	<1%	1%	6%
Satisfactory	4%	9%	3%
Good	28%	29%	28%
Great	67%	61%	63%

Full Year Cohort Perceptions of the Impact of the Intro to Tech Class

Indicate the extent to which you agree with the following statements.	
Answer Options	Percent Who Agree/ Strongly Agree
I make an effort to do the best work I can in all of my classes.	88%

Indicate the extent to which you agree with the following statements.	
Answer Options	Percent Who Agree/ Strongly Agree
I feel confident that I can do well in my classes if I work hard.	91%
I often take the time to learn more about a subject than what is presented in class.	66%
I feel the Intro to Tech class increased my confidence in trying different strategies to solve problems.	78%
I like to be challenged in my classes.	78%
As a result of my experience in the Intro to Tech class, I enjoy working with other classmates on project.	88%
I feel the Intro to Tech class increased my ability to communicate my thoughts to my teachers.	66%
I feel the Intro to Tech class increased my ability to communicate my thoughts to my peers.	75%
I feel confident in my ability to express my thoughts in writing to my teachers.	53%
I feel confident in my ability to express my thoughts in writing to my peers.	59%
I sometimes use skills I learned in the Intro to Tech class to complete assignments in my other classes.	84%

Project Director and SmartLab Facilitator Perspectives

The project director and the teacher who served as the SmartLab Facilitator are pleased with the implementation of the Intro to Technology class and plan to continue offering the option of taking the course all year long for a small cohort of students. One of the project director's goals for the 2011-12 school year is to develop a final exam for the class. He is interested in quantifying student learning outcomes. In terms of long term sustainability, the project director's biggest concern is limited funds to replace the computers in 3-5 years.

The project facilitator's goal is to have students get through all 15 engagements, which they have not yet been able to do. He reported that he feels more comfortable with the equipment and has a better sense of how much time he needs to spend prepping the kids before they start the first engagement. He feels that next year he will be able to shorten the orientation period which will allow more time for engagements.

Clark County

Year 2 Grant Activities

During Year 2 Clark County used grant funds to pay for course fees charged by Vegas PBS TeacherLine, reimburse over 250 teachers who completed Vegas PBS TeacherLine courses, purchased 180 school computers and servers for nine schools, paid labor costs to deploy the computers, purchased the FASTTMath program for 10 schools, and allocated funds toward renewing its Novell licenses.

Highlights of Teacher Survey Data

TeacherLine Follow Up Survey

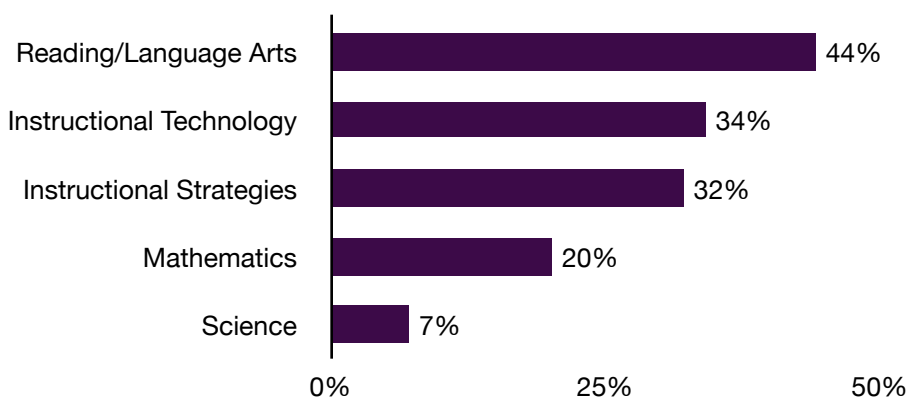
At which grade level do you teach?

Answer Options
N=111

Response Percent

Elementary	64%
Middle School	17%
High School	18%

Focus Area of Courses Taken



Enhanced Skills and Knowledge

To what extent do you feel the TeacherLine course(s) enhanced your skill and knowledge in the following areas?

Answer Options
N=115

Percent Response
Enhance/Greatly
Enhanced

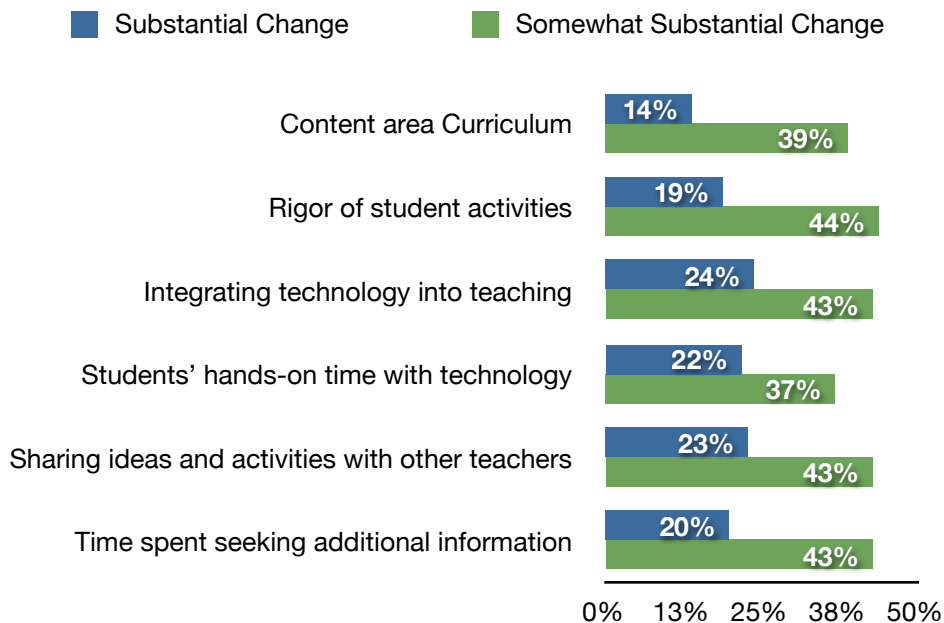
Instructional methods	85%
Ability to identify content appropriate resources to assist in lesson planning.	89%

Using technology to address students' learning needs.	83%
Strategies for planning differentiated instruction.	82%
Strategies for implementing and managing differentiated instruction.	80%
Theory-based understanding of your content area.	78%
Learning theory (i.e., how students learn) related to your content area.	83%
Improving student assessment.	81%

Below are some of the outcomes that teachers reported related to implementing new strategies learned in their TeacherLine course:

- 👤 Having a better understanding of students' capabilities
- 👤 Better scores on assessments
- 👤 Students gaining more thorough understanding of content
- 👤 Increased student engagement and enjoyment of learning activities
- 👤 Improved use of school computer resources
- 👤 Teacher collaboration around differentiated instruction
- 👤 Better student retention of course content
- 👤 Improved student writing

Changes in Teaching Practices



Most significant teaching change related to taking TeacherLine Course

- 👤 Increased/renewed enjoyment in teaching content
- 👤 More planning
- 👤 Increased focus on student assessment and using data to tailor instruction
- 👤 Increased use of technology
- 👤 Increase in student-centered learning
- 👤 Increased collaboration among teachers
- 👤 Use of blogs and other social media
- 👤 More open-ended questioning to test for student understanding

Most significant student learning change related to using the SMARTBoard

- 👤 Increased student engagement
- 👤 Increased student motivation
- 👤 Students better prepared for next grade level

TeacherLine Feedback Survey: Fall 2010

At which grade level do you teach?	
Answer Options N=72	Response Percent
Elementary	56%
Middle School	25%
High School	19%

Professional Development Feedback

Indicate your level of agreement with the following statements.	
Answer Options N=72	Percent Agree/Strongly Agree
The course objectives were clear.	92%
The difficulty level of the course was appropriate.	93%
There were adequate opportunities to ask questions.	94%
There were adequate opportunities to receive feedback.	96%
The feedback I received was useful.	93%
Participating in the course was a good use of my time.	93%

The breadth and depth of the course content met my expectations.	89%
The course provided me with strategies that I could immediately put to use in my classroom.	92%
Overall, the course was of high quality.	93%

Change in Teaching Practice

Choose the response that best describes your action. Since completing the course are you...					
Answer Options N=72	Not currently doing this	Considering doing this	Preparing to do this	Have done this once/a few times	Doing this on a regular basis
Modifying your lesson plans to incorporate strategies you learned in the course?	6%	8%	10%	46%	31%
Modifying your instructional practice based on information/strategies you learned in the course?	6%	7%	13%	44%	31%
Evaluating the impact of newly adopted instructional strategies on student learning?	6%	6%	24%	36%	29%
Seeking out additional information to build on what you learned in the course?	7%	7%	13%	39%	35%
Sharing what you learned in the course with other grade/subject level teachers at your school?	10%	11%	13%	38%	29%

FASTTMath Teacher Survey

Number of Respondents by Grade Level

At what grade level do you teach?	
Answer Options	Response Percent
3	43%
4	29%
5	31%
6	4%
7	4%
8	3%

Teachers' Perceptions of the Ease/Difficulty of Implementing FASTTMath

Indicate the extent to which the following aspects of FASTT Math have been easy or difficult for you.						
Answer Options	Very Easy	Easy	Somewhat Easy	Somewhat Difficult	Difficult	Very Difficult
Adequate access to computers	38%	27%	16%	12%	3%	4%
Finding time to regularly implement FASTT Math	15%	26%	24%	23%	5%	6%
Managing logistical implementation of FASTT Math	16%	34%	29%	15%	4%	2%
Generating student reports	20%	29%	27%	16%	4%	5%
Analyzing student reports and data	20%	27%	28%	16%	4%	4%
Using student data to improve implementation	14%	28%	27%	21%	5%	5%
Using strategies in the implementation guide	11%	20%	35%	23%	3%	8%

Despite indications, from the data presented in the table above, that implementing FASTTMath was relatively easy, teachers' responses to an open-ended question about other implementation issues revealed that there were a few areas where teachers had a great deal of frustration. These include:

- 🗨️ Access problems due to the server being down
- 🗨️ Problems un-enrolling students who left the school and enrolling new students
- 🗨️ System-related problems where students who completed an operation were not advanced to the next level (i.e. a student mastered addition facts for "3s" but the program would not move them to "4s")
- 🗨️ Managing student time related to doing the math drills versus spending time playing the games

Below are teachers' comments related to problems they had with FASTTMath

We have too many math programs, Fastmath is only useful/usable for facts. Using it for intervention would probably be great but there's only so much time in a day, I don't have another 1/2 hr to devote to the lowest of the low. I don't need any more lessons or videos on how great it is, just practical ways of implementing it in the classroom.

There were too many times when the program was not available because your server was down.

There were too many times when the program was not available because your server was down.

I didn't know we had a guide or practice sheets

This program was a complete waste of 1 and 1/2 hours of math instruction per week. Other teachers stopped going. I wish I had followed their lead and stopped going as well. I thought we HAD to use the program. My students would have done much better with their math facts if I had stopped going as well. All the teachers have been complaining about what a waste of time it is because stu-

dents who can easily complete 100 math problems in 2 minutes fail to score as adequate on your program. It keeps kids adding 1 +0 for months...when it only takes minutes to master that skill.

Having trouble getting into the computer lab was one problem and not having very many class computers would be the next big issue with 4 computers for 26 children it was hard to get through everyone in one day

Students who are laggards...don't pursue the program with enthusiasm. With a computer program I don't mind monitoring, but I can't stand there watching every student to see if they are really giving it their best effort.

Teachers' Satisfaction with FASTTMath

Teachers were asked to indicate their level of satisfaction with various expected outcomes of using the software. Over two-thirds of the teachers indicated that they were satisfied or very satisfied that FASTTMath increased student motivation to learn math facts (68%) and improved students' math facts fluency (66%). However, when asked about their level of satisfaction that using FASTTMath helped students with knowledge transfer, only 55 percent reported that they were satisfied or very satisfied that students' were able to transfer math facts fluency to either their daily math work or to teacher-created assessments.

Comments in Favor of Recommending FASTTMath

I have used other math programs in my class. I never saw the same level of excitement about math as I did when I started using Fastt Math. The students loved to play the games on the program.

This helps with automaticity and students like the program.

It provides the facts practice that I can't provide in class.

It's easy to use and it works.





Comments against Recommending FASTTMath

I think it is trying to be too much. It is fine for improving fluency, but your implementation guide talks about using small groups, grouping, worksheets, reports, interventions at particular skill deficiencies; not stuff I have time for when this is just a fact practice program. I think it is probably too expensive for being really a glorified worksheet for unmotivated kids who won't practice at home. I already have a math program, several in fact, don't need another. If you want to be a comprehensive math curriculum, than do so, but no teacher has time for two math programs a day.

This program is ineffective in improving student performance. Part of the problem may be that we use primarily laptop computers therefore numbers on keyboard slow the students down significantly.

It works very well as long as you continue. I noticed during crts and we didn't have as much time they lost some of their facts.

Teachers' Training Needs

-  Accessing and utilizing student reports
-  Managing student lists (enrolling and un-enrolling students)
-  Classroom management strategies when rotating small groups through the program
-  Helping students access FASTTMath at home

- 👤 How to use the support materials
- 👤 Better understanding of how to use the placement assessment

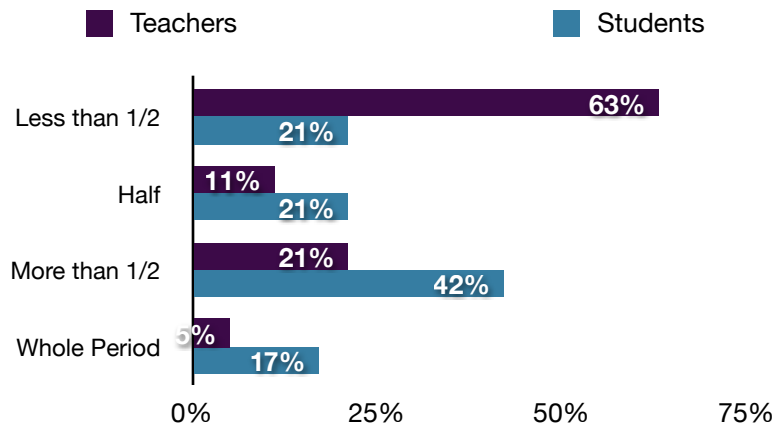
Technology Use Survey

At which grade level do you teach?	
Answer Options N=28	Response Percent
Elementary	93%
Middle School	7%

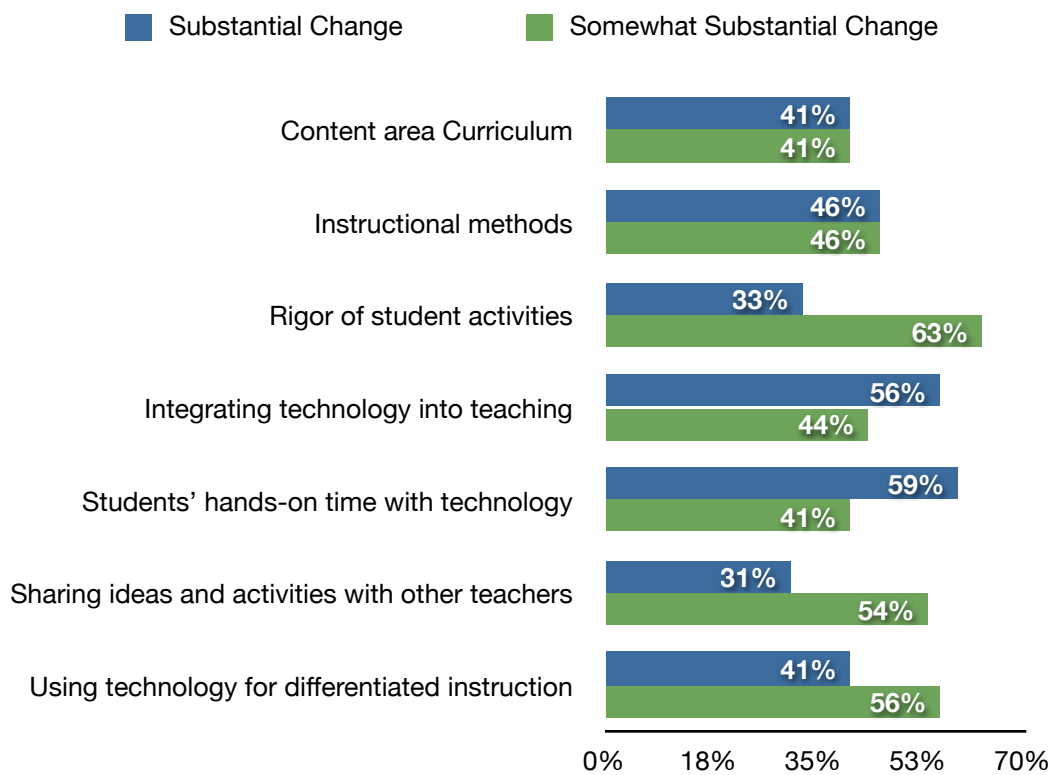
Teachers' Technology Use

Indicate your level of agreement with the following statements.	
Answer Options N=27	Percent Agree/Strongly Agree
The overall frequency with which technology is used during class.	100%
The time I spend on the Internet looking for content-specific resources.	84%
The frequency with which I use a projector to display web-based or other information to the class.	88%
My use of presentation software to create slide shows for my class.	81%
The overall frequency with which students access the Internet during class.	96%
The frequency of student Internet research.	92%
The number of technology-related projects students work on in my class.	93%
My use of email to communicate with teachers, parents, and/or students.	79%
My use of technology for administrative tasks (i.e., attendance, grading)	83%
My use of school and/or district-provided software programs.	93%
My overall productivity.	96%
My interest in doing more to integrate technology into my curriculum.	100%

Frequency of Teacher and Student Use of Technology in a Given Class Period



Changes in Teaching Practices



Teachers' Perceptions about the Use of Technology

Indicate the extent to which you agree with the following statements.

Answer Options N=27	% Agree/Strongly Agree
Students are using technology more this year than they did last year.	100%
I feel I have the necessary skills to teach with technology.	81%
I feel I have a good understanding of the best ways to use technology in my content area.	81%
Most times I am able to answer students' questions about the technology we are using.	89%
I am often looking for ways to increase students' use of technology.	100%
Teacher collaboration and support for technology use has increased.	89%
I feel like I need technology-related professional development to make better use of the new computer	73%

Most significant teaching change as a result of having new computers

- 👤 Increase in the use of technology for differentiated instruction
- 👤 Increased use of software
- 👤 Ability to connect the computer to a projector/document camera
- 👤 Quicker access to websites
- 👤 Increased efficiency

Most significant student learning change as a result of having new computers

- 👤 Students learned how to do Internet searches
- 👤 Increased confidence in navigating the Internet
- 👤 Increased time using educational games
- 👤 Students become independent learners
- 👤 Increased engagement
- 👤 Increase in student technology projects

Project Director Perspective

The project director is satisfied with what the district was able to accomplish with the grant funds and appreciated that the grant funded a two-year program. At the end of Year 1 she expressed some concern about using Year 2 funds to purchase FASTTMath for more schools based on the usage reports. However, on reflecting on two years of supporting FASTTMath she believes the district “made a good faith effort” to pilot the program. She feels very strongly that grant funds were put to good use in the replacement of

workstations and servers at schools that were most in need of this equipment. She also shared that teachers are so appreciative of the new computers that her department sometimes gets thank you cards from classrooms.

In reflecting on lessons learned related to the grant implementation, the project director expressed regret that in relation to the immediate needs of the district (i.e. renewing the district's Novell licensing), she did not have enough "people money." She indicated that if she had enough funding she would have had someone working with the teachers who were part of the grant. She feels that in order to have real impact related to the investment, the district needed to have someone working with teachers to provide more instructional support. While she indicated that the district will continue to reimburse teachers who complete TeacherLine courses, she is interested in looking at how to make some changes in which courses are eligible for reimbursement because she believes "that the professional development pieces need to be tied directly and obviously to [the] district technology plan."

The project director indicated that she has "huge concerns" about limited funding for technology. As she stated, "There's never enough money to get our foot in the door with what we need...We'll continue to buy servers as we can scramble money together. That need never goes away in a district this large. We'd really like to keep our classroom computers within 5 years old. We don't know if we'll be able to do that, but that's always the goal."

Douglas County

Year 2 Grant Activities

During Year 2 of the ETIF Grant, funds were used to buy ActivExpression for eight teachers who did not receive them in Year 1 as well as iPads, which were used for data collection. Douglas County continued to support teachers through a series of professional development sessions centered around the use of the Promethean suite of products including the Promethean interactive whiteboard, ActivInspire software, ActivExpression (student response system), ActivSlate, and ActiView (document camera). During Year 1, Douglas County teachers received training on these devices exclusively from the technology trainer in Washoe County. In Year 2, the training model was expanded based on Year 1 teachers' interest and willingness to serve as mentors for other teachers in the district. As a result, funds from a \$1 million Community Foundation for Western Nevada donation were used to support 12 teachers' participation in a 4-day ActivInstructor course that took place in August 2010. Teachers received 30 hours of training in which they learned how to deliver the Core Essentials and Beyond the Essentials workshops to other teachers in the district. In addition to this training teachers participated in two additional vendor-provided training sessions as well as two sessions provided by Washoe County.

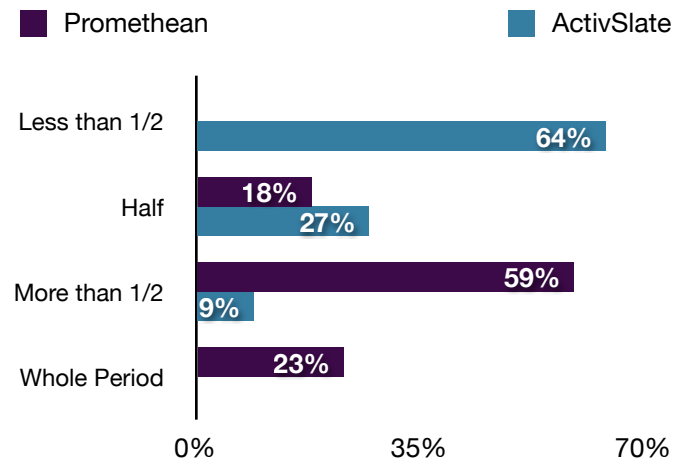
Highlights of Teacher Survey Data

At which grade level do you teach?	
Answer Options N=22	Response Percent
Elementary	41%
Middle School	36%
High School	14%
Middle School & High School	9%

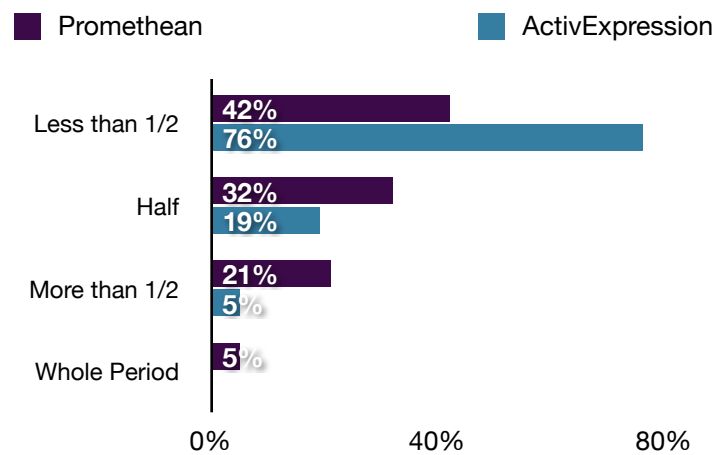
Teachers' Comfort with the Promethean Board

Compared to last school year, how would you rate your comfort level in using the following technology?			
Answer Options N=22	Promethean	ActivSlate	ActivExpression
Not Comfortable	0%	9%	9%
Somewhat Comfortable	9%	14%	27%
Comfortable	9%	27%	14%
Very Comfortable	82%	50%	50%

Frequency of Teachers' Use of Promethean and ActivSlate in a Given Class Period



Frequency of Students' Use of Promethean and ActivExpression in a Given Class Period



Professional Development Feedback

Indicate your level of agreement with the following statements.

Answer Options
N=22

Percent
Agree/Strongly Agree

The training objectives were clear.

95%

The difficulty level of the training was appropriate.

95%

The training was adequately paced.

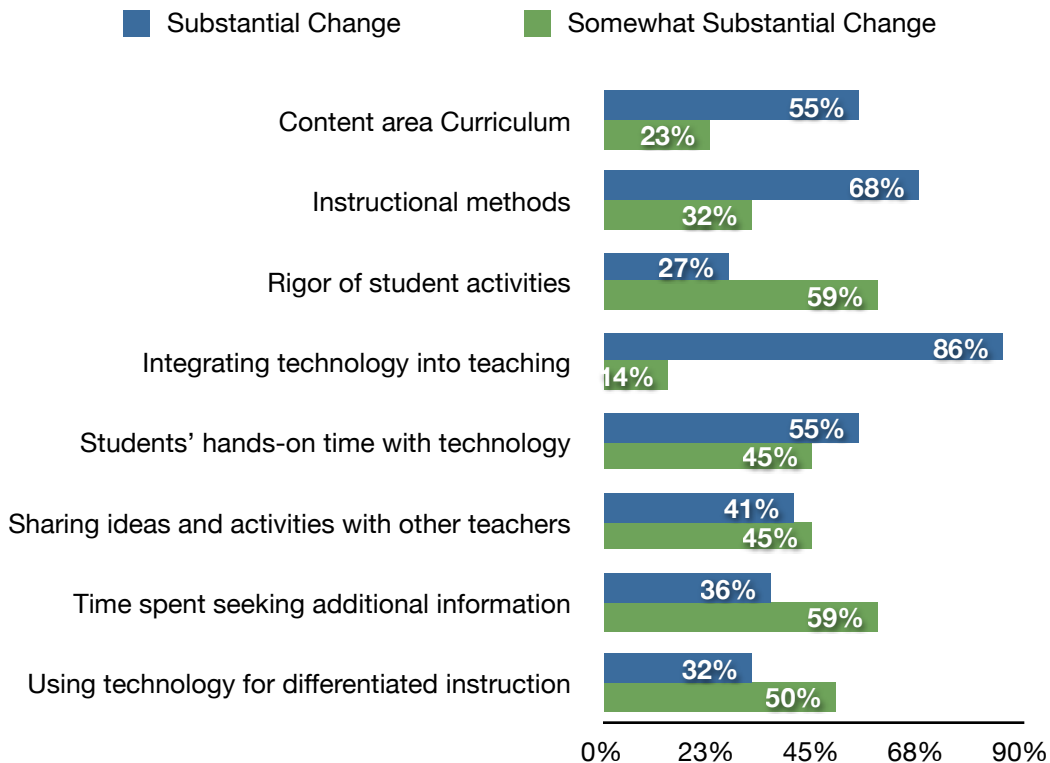
95%

The training was well organized.

95%

Indicate your level of agreement with the following statements.	
Answer Options N=22	Percent Agree/Strongly Agree
There was an adequate balance between information gathering and hands-on activity.	100%
There were adequate opportunities to ask questions.	100%
There were adequate opportunities to receive feedback.	100%
The feedback I received was useful.	90%
Participating in the training was a good use of my time.	95%
The breadth and depth of the training content met my expectations.	90%
The training helped me build on what I learned last year.	80%
The focus of the training was directly linked to new things I'm trying/would like to try in my classroom.	95%
The training provided me with strategies that I could immediately put to use in my classroom.	100%
Overall, the training was of high quality.	90%

Changes in Teaching Practices









Teachers' Perceptions about the Use of Technology

Indicate the extent to which you agree with the following statements.	
Answer Options N=22	% Agree/Strongly Agree
Students are using technology more this year than they did last year.	100%
I feel I have the necessary skills to teach with technology.	100%
I feel I have a good understanding of the best ways to use technology in my content area.	100%
Most times I am able to answer students' questions about the technology we are using.	95%
I am often looking for ways to increase students' use of technology.	100%
Teacher collaboration and support for technology use has increased.	86%

Various Ways that Teachers Typically Use the Promethean Board

Indicate the ways you typically use the Promethean?	
Answer Options N=22	Response Percent
Presenting and reinforcing learning routines and schedules	73%
Facilitating individual or small group learning activities	82%
Utilizing flexibility to extend learning based on student generated ideas	59%
Engaging students in interactive learning games	82%
Testing for understanding/quick assessment	91%
Increasing supplemental content presented on a given topic/concept	86%
Differentiating instruction	73%
Saving class discussion notes for future use	73%

Most significant teaching change related to using the Promethean and ActivSlate

-  Better prepared and more organized for each class
-  Increased awareness of classroom activity
-  Increased interactivity of lessons
-  Increased time spent on lesson plans
-  Increased student-centered learning
-  Increased use of supplemental materials to support student learning

Most significant student learning change related to using the Promethean and ActivExpression

- 👤 Increased student engagement
- 👤 Increased instructional time
- 👤 Increased planned and “on the fly” testing for student understanding
- 👤 Increased student participation in learning process
- 👤 More meaningful whole class discussions

Project Director Perspective

The project director is satisfied with the implementation of the grant, giving credit to the success in Year 2 to what was learned in the first year about how to effectively deliver professional development. He credits some of the changes that were made (i.e., expanding into vendor provided training and having teachers serve as mentors) to feedback the district received from the evaluator’s comments in the Year 1 Interim Report. As he described the Year 2 implementation, “We had better training, better direction as to where we were going, more teacher commitment. We had a PD cadre of year 1 teachers who committed to be trainers and mentors; we had more people using what they learned in their classrooms as there was more collaborating; we had middle school teachers whose students had these whiteboard experiences in elementary school and expected same, so teachers looked for PD and found what they needed from their peers and from district PD improvement.”

While the project director is pleased, overall, with the increased use of technology, he stills sees room for improvement. When asked about his opportunities to observe teachers using the Promethean equipment in their room, he indicated that technology use varies depending on grade level and site. As was the case in Year 1, elementary teachers are further along in the frequency and instructional ways they use the tools, “middle school teachers are coming along, and high school teachers are still using it more as a ‘glorified’ white board.”

In summing up the implementation of the grant, the project director indicated that the district is fully committed to funding additional professional development and that the teacher mentor model will continue. He did not indicate any concerns related to being able to sustain what was accomplished in the grant. In a final statement during his interview he shared, “The purchase part was easy; getting the professional development right was the most challenging. After last year’s evaluation suggestions, we worked over the summer to make changes by adding multiple levels and multiple types of training. We provided better “menu” options for teachers and had a better roll out of the whole program.”

Elko County

Year 2 Grant Activities

Elko County continued its use of Ed Tech Grant funds to support two teachers' (one middle school and one high school) participation in the Nevada Pathway Project. Specifically, Flip video cameras were purchased and funds were used to support teachers' attendance at the Florida Educational Technology Conference and the Nevada State Ed Tech Conference in October 2010.

Highlights of Teacher Survey Data

As participants in the Nevada Pathway Project, teachers received a class set of laptop computers and iPods. Both teachers reported that, compared to their first year in the project, they felt very comfortable integrating students' use of laptops. One teacher reported feeling "comfortable" and the other one reported feeling "very comfortable" integrating students' use of the iPods.

In terms of the amount of time that students spend using the laptops and iPods in a given class period, both teachers reported that their students use the laptops more than half of the class period and the iPods less than half of the class period.

Changes in Teaching Practices

Both teachers indicated that as a result of their participation in the Nevada Pathway Project they made somewhat substantial or substantial changes in the following areas of their teaching practice:

- 👤 Content area curriculum
- 👤 Instructional methods
- 👤 Rigor of student activities
- 👤 Integrating technology into their teaching
- 👤 Integrating students' hands-on time with technology
- 👤 Sharing ideas and activities they learned in their training with other teachers at their school
- 👤 Time they spend seeking out additional information to build on what they learned in the training
- 👤 Using technology to plan for differentiated instruction

Teachers' Perceptions about the Use of Technology

Both teachers agreed or strongly agreed with the following statements about the use of technology:

- 👤 Students are using technology more this year than they did last year
- 👤 I feel I have the necessary skills to teach with technology
- 👤 I feel I have a good understanding of the best ways to use technology in my content area
- 👤 Most times I am able to answer students' questions about the technology we are using
- 👤 I am often looking for ways to increase students' use of technology

Professional Development Feedback

Indicate your level of agreement with the following statements.			
Answer Options N=2	One Agree/ One Disagree	Both Disagree	Both Agree
The training objectives were clear.	X		
The difficulty level of the training was appropriate.	X		
The training was adequately paced.		X	
The training was well organized.	X		
There was an adequate balance between information gathering and hands-on activity.		X	
There were adequate opportunities to ask questions.			X
There were adequate opportunities to receive feedback.			X
The feedback I received was useful.	X		
Participating in the training was a good use of my time.	X		
The breadth and depth of the training content met my expectations.		X	
The training helped me build on what I learned last year.			X
The focus of the training was directly linked to new things I'm trying/would like to try in my classroom.			X
The training provided me with strategies that I could immediately put to use in my classroom.			X
Overall, the training was of high quality.			X

Project Director Perspective

At the end of the 2009-10 school year, the project director for the ETIF Grant retired. During end-of-year follow up with all project directors, evaluators conducted a phone interview with the new project director. He did not have much information to share about the project because he, admittedly, had been only minimally involved with the project during Year 2. It appears that the level of involvement was primarily dictated by the nature of the grant activities. Given that equipment had already been purchased and teachers were participating in a structured statewide professional development program, grant oversight was seemingly minimal.

As a result of the discontinuity in grant management, evaluators were not able to obtain an overall retrospective on satisfaction with grant implementation and any lessons learned. When asked about district plans to expand on what was implemented with the grant, the project director shared that there are plans to align the transition to the Common Core standards with a district-wide adoption of integrating digital instruction into the core curriculum.

Esmeralda County

Year 2 Grant Activities

Esmeralda County's implementation of the ETIF Grant was slightly non-conventional in that during both Year 1 and Year 2 of the grant, most of the district's grant money was expended toward the end of the school year. In Year 1 the district purchased Mobi devices for teachers to remotely interface with their SMART Boards. In Year 2, the project director purchased iPads, iPod Nano devices, and laptop computers for teachers and students.

In speaking with the project director, evaluators found that each teacher received, on average about 5 hours of one-on-one training related to using the Mobi slate. As the project director, who is also the district's technology coordinator described, "Because I have such a flexible job in the district when I go to each school I touch base with each teacher and when they ask for help I'm able to provide it." He indicated that the teachers are not all at the same skill level and frequency of use, but even reluctant users are "coming around..when they see the kids engaged in another classroom where teachers are using it they want more [training] because they see how the kids are learning."

Summary of Year 2 Data Collection

Evaluators administered an online survey to all six teachers in the district. Three teachers accessed the online survey; however, only one teacher fully completed the survey. Evaluators believe this is most likely a result of instrument error. The survey questions were developed with an understanding that evaluators had of project implementation based on the interview with the Technology Coordinator; namely that teachers had received professional development. However, when questions about the PD were posed, two of the teachers reported that they never had training and one teacher did not answer the question. Based on this response, the "skip logic" built into the online survey advanced these respondents past the PD questions so there is only feedback on professional development from one teacher. Given this low response rate, no summary data are provided here.

Most significant teaching change related to using the Mobi

- 👤 Being able to move around the room
- 👤 Ease in displaying information

Most significant student learning change related to using the Mobi

- 👤 Increased student engagement
- 👤 Increased student interactivity during lessons
- 👤 Improved ability of students' to "visualize" what they are learning

Project Director Perspective

When asked about teachers' use of the Mobi slate, the project director shared that teachers are using the board to provide direct instruction by projecting the content from CDs associated with their texts. "Teachers are brining in their CDs from Harcourt and other companies and they are teaching directly from the CD and

interacting with the students so the students are getting the most up to date learning from the creators of the books.” He also shared that some teachers allow students to use the Mobi and manipulate what the class is able to see on the board. According to the project director, what teachers enjoy most about the Mobi is not being “tethered to the board.”

District plans to expand what was implemented with the ETIF Grant include supporting the district-wide adoption of Apple products, including 1:1 iPads for students and Macbook computers for teachers. The district will continue to use its 1:1 PCs that are in classrooms, but the project director was so impressed with the work students were able to do with Mac products (through the Nevada Pathway Project) that he sees them as a must have for the students.

There is some concern about having enough funds to sustain what was accomplished with the grant. The project director shared that, “At this point we have everything running but I do worry if something goes out. With the few students that we have we don’t have a large general fund. If we had to purchase a new board or some other equipment it would be hard to get without the funds we have now to support what we are doing. It worries me that the state might cut technology money. If things get cut then we could lose the best thing we’ve got going, which is the technology.”

Eureka County

Year 2 Grant Activities

Eureka County used its Year 2 Ed Tech Grant money to fund its wireless project. The district outsourced the work directly with Dell, which ended up subcontracting out the work. The process took a lot longer than the district's Technology Director anticipated and based on the experience he would not recommend working with Dell in the future. Prior to taking on the project of upgrading the wireless capability at the district's three campuses, teachers were limited to access points that were connected to individual laptop carts. Typically, connectivity only extended to a few classrooms down or across the hall from wherever the laptop cart was stationed. This configuration was very restrictive and limited teachers' ability to get students online.

Highlights of Teacher Survey Data

Evaluators determined that because the upgrade to the wireless system had taken most of the school year, teachers would not have used it long enough to provide feedback on how the upgrade was affecting their computing capabilities, and subsequently their instruction. Therefore, the Technology Use Survey was only administered to teachers who received new computers purchased with ETIF Grant money.

At which grade level do you teach?	
Answer Options N=10	Response Count
Junior High	1
High School	2
Junior High & High School	7

Student and Teacher Use of New Computers

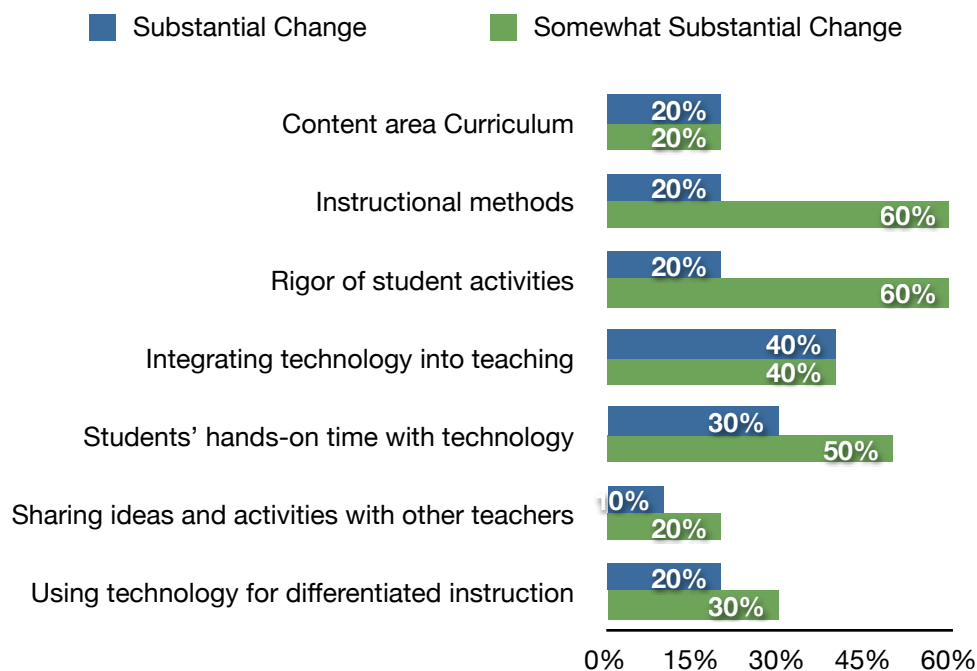
Indicate the extent to which you agree with the following statements.	
Answer Options N=10	Percent Who Agree/ Strongly Agree
The frequency with which I take my students to the lab has increased	90%
The amount of Internet-research students do for my class has increased	100%
The number of technology-related projects students complete for my class has increased	89%
Students' use of district-provided software has increased.	78%
The amount of time I spend looking for web-based resources to support my curriculum has increased	100%
I have had problems scheduling the lab when I want to use it with my class(es)	30%
I feel like I need technology-related professional development to make better use of the lab	50%

Frequency of Teacher and Student Use of Computers During a Given Class Period

On average, how much time in a given class period are computers used for instructional purposes?

Answer Options N=10	Less than 1/2 of the period	Half of the period	More than 1/2 of the period	The whole period
Teacher	80%	20%	0%	0%
Students	40%	30%	10%	20%

Changes in Teaching Practices







Teachers' Perceptions about the Use of Technology

Indicate the extent to which you agree with the following statements.





Answer Options N=10	% Agree/Strongly Agree
Students are using technology more this year than they did last year.	78%
I feel I have the necessary skills to teach with technology.	80%
I feel I have a good understanding of the best ways to use technology in my content area.	70%

Indicate the extent to which you agree with the following statements.	
Answer Options N=10	% Agree/Strongly Agree
Most times I am able to answer students' questions about the technology we are using.	70%
I am often looking for ways to increase students' use of technology.	89%
Teacher collaboration and support for technology use has increased.	40%
I am able to complete administrative tasks with greater efficiency.	90%

Most significant teaching change related to having access to new computers

-  Using textbook CDs instead of purchasing new books
-  Increased access to content-related material
-  Use of streaming video
-  Increased use of online testing and homework submission

Most significant student learning change related to having access to new computers

-  Increased student engagement
-  Improved student collaboration (i.e., sharing and editing during writing process)
-  Learning from online content not previously accessible on older computers
-  Increase in assignments requiring time in the computer lab

Project Director Perspective

While it took the better part of the 2010-11 school year to get the wireless configuration up and running at the three campuses, the project director reported that teachers are excited about having “hot spots” all over campus. As he described it, “They like the idea of grabbing the laptops and just being able to go anywhere in the classroom.” In addition to completing the wireless upgrade, the district used another funding source to purchase site licenses to install Office 2010 on the grant-funded computers that were placed in the HS Library/Media Lab. Currently the computers are running Windows XP and Office 2003; the plan is to migrate them to Windows 7 and Office 2010.

In terms of working with a large outfit such as Dell to put together an implementation plan for a small district, the project director indicated that he would not do that again. In his own words, “Dell was too big and did not know how to properly address the needs of a small district.”

Eureka County is not in the same situation, financially, as other districts in the state. While the project director welcomes and is appreciative of the state funding, he acknowledges that, “Here in Eureka we’re financially in good shape compared to the other districts. With the gold money we’re experiencing right now we’re able to take care of the things that we need. We’re small. We only have 230 kids so a little bit of gold money goes a long way.”

Humboldt County

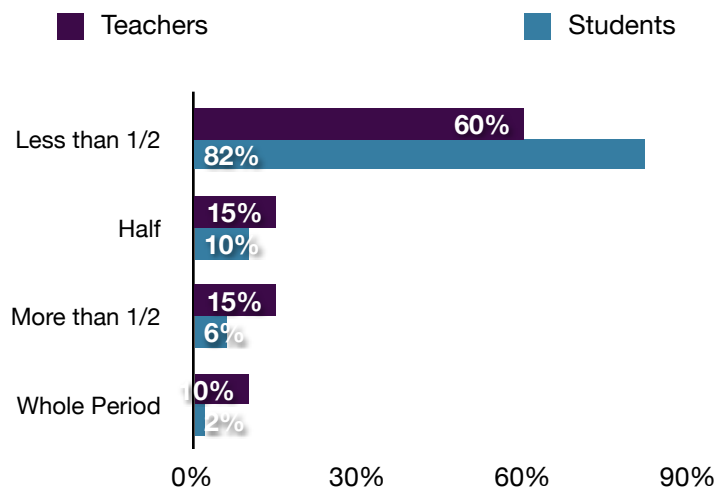
Year 2 Grant Activities

Humboldt County used its Year 2 grant funds to continue its plan to replace teacher workstations throughout the district. In Year 1 funds were exclusively allocated to purchasing computers for high school teachers, but in Year 2 approximately 70 new computers were distributed to teachers at all grade levels. Because the district was able to find computers at a price point lower than what was in its funded proposal, it was able to buy more computers and larger monitors for teachers. The district provided the unmet funding need so that all teachers in the district would be equipped with a new computer. The majority of the teacher computers that were replaced were five or more years old and the district has not yet started to replace student computers that are 10-12 years old.

Highlights of Teacher Survey Data

At which grade level do you teach?	
Answer Options N=75	Response Percent
Elementary	61%
Junior High	9%
High School	29%

Frequency of Teacher and Student Use of Technology in a Given Class Period

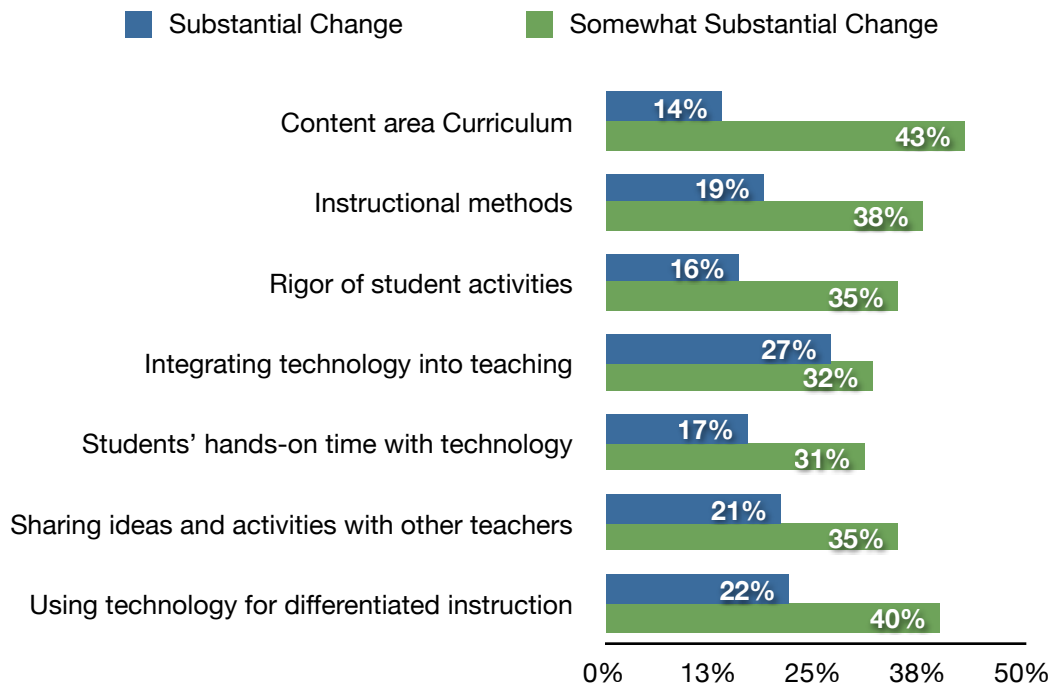


Teachers' Use of Technology

Indicate your level of agreement with the following statements.

Answer Options N=75	Percent Agree/Strongly Agree
The overall frequency with which technology is used during class.	76%
The time I spend on the Internet looking for content-specific resources.	74%
The frequency with which I use a projector to display web-based or other information to the class.	68%
My use of presentation software to create slide shows for my class.	63%
The overall frequency with which students access the Internet during class.	57%
The frequency of student Internet research.	50%
My use of email to communicate with teachers, parents, and/or students.	83%
My use of technology for administrative tasks (i.e., attendance, grading)	88%
My use of school and/or district-provided software programs.	79%
My overall productivity.	83%
My interest in doing more to integrate technology into my curriculum.	80%

Changes in Teaching Practices



Teachers' Perceptions about the Use of Technology

Indicate the extent to which you agree with the following statements.

Answer Options N=75	% Agree/Strongly Agree
Students are using technology more this year than they did last year.	74%
I feel I have the necessary skills to teach with technology.	77%
I feel I have a good understanding of the best ways to use technology in my content area.	72%
Most times I am able to answer students' questions about the technology we are using.	88%
I am often looking for ways to increase students' use of technology.	85%
Teacher collaboration and support for technology use has increased.	73%
I feel like I need technology-related professional development to make better use of the new computer.	64%

Most significant teaching change related to having a new computer

- 🖱 Increased efficiency with faster computer
- 🖱 Increased use of computer for instructional purposes
- 🖱 Increased use of projector and SMARTBoard
- 🖱 Using computer to access content not available in outdated texts
- 🖱 Accessing more online supplemental teaching resources
- 🖱 Increased ability to quickly search the Internet to respond to students' research questions

Most significant student learning change related to having a new computer

- 🖱 Students able to quickly access information on teachers' classroom computer rather than having to plan/schedule time in the computer lab
- 🖱 Increased use of classroom SMARTBoard
- 🖱 Better understanding of content when computer is used to provide visual representations

Project Director Perspective

In addition to replacing outdated workstations, installing new computers facilitated the district's ability to purchase the A+Learning program. The Project Director reported that the new computers were the first to get A+ Learning (an online courseware program that facilitates course recovery and remediation).

While it was a significant accomplishment to provide every teacher in the district with a new computer, there are some networking issues that affect teachers' ability to use the computers to their full potential. Currently, many teachers are using the computers for administrative rather than instructional purposes because of efforts to manage web traffic due to limited bandwidth. The district has submitted an eRate application to increase bandwidth by moving the schools from a T1 line to fiber optic. The district has also partnered with local business and mines to receive donations of used computers that replace very old student computers.

The project director shared that in addition to using their new computers for administrative tasks, teachers were also using them to connect to projectors or SMART Boards, though she admitted that the level of use depends on the teacher. "Some only do grades and email." Humboldt County did not intend to use grant funds to provide teachers with professional development related to using the new computers for instructional purposes; however, the project director admits that she would like to see more PD offerings for teachers.

According to the project director, limited human resources was the biggest challenge the district faced in implementing the grant. Because the technology staff is limited it took the entire school year to install all of the new computers. Tech staff had to balance completing the computer swap with their already full tech support and maintenance schedule. At the time of the interview in early May 2011, the last computers were still being installed.

The biggest sustainability concerns are with "what the future holds for replacing these computers next time around" and with meeting teachers' technology support needs. The Project Director feels that because the staff is so small (three people) that they "can never be caught up" and that "it's hard when teachers have to wait to get their computers repaired."

Lander County

Year 2 Grant Activities

The implementation of Lander County's Ed Tech Grant took place primarily "behind the scenes," with Oasis Online handling the ordering and installation of new switches and routers. The roll out for installing the new equipment began in summer 2010 and continued into the spring of 2011. Because of the gradual roll out it was difficult for evaluators to capture outcome data related to grant implementation.

Year 2 Data Collection Activities

Evaluators conducted a phone interview with the project director, Dan Slentz, who is also co-owner of Oasis Online, the company that provides Technology Management services for the district. In an attempt to get impact data directly from district staff, evaluators sent multiple emails and left voicemail with the district superintendent requesting an interview; there was no response to these requests. Evaluators also attempted to collect feedback from teachers on the Technology Use Survey, but there were no responses to the survey request. As a last attempt to collect data from teachers, evaluators contacted Dr. Kim Vidoni, Educational Technology Coordinator for the Nevada Department of Education, for assistance in getting teachers to respond to the survey. Dr. Vidoni sent an email to Mr. Slentz, requesting that he disseminate the survey link to teachers. Mr. Slentz confirmed that he would send the survey link to teachers, but this effort also failed to yield any responses to the teacher survey.

In a final attempt to gather outcome data, evaluators were in communication with Mr. Slentz in hopes that he would be able to generate reports that would show how the network is functioning with the upgraded switches and routers compared to how it was previously functioning. Mr. Slentz researched the availability of such reports, but was unable to generate these data.

Project Director Perspective

The project director indicated that the new switches and routers installed over the two-years of the grant were a much needed upgrade to Lander County School District's computing network. While there is no quantifiable or teacher anecdotal data to include in this report, the project director reported that the noticeable change that teachers would see as a result of the upgrade is increased speed and improved performance of the network. He also shared that while teachers would notice a tremendously more reliable network, the upgrade also provided an added benefit behind the scenes. IT staff can more easily monitor network traffic, which in turn makes it easier to troubleshoot and deal with problems before they take down the network.

Lincoln County

Year 2 Grant Activities

During Year 2 of the ETIF Grant, Lincoln County expanded its 1:1 laptop initiative from one middle school that served as the pilot site in Year 1 to five additional campuses. This expansion included all 6th-8th grade students in the district. Netbooks were purchased for teachers and students and an additional part-time Technology Integration Specialist was hired. Other Year 2 activities included hosting a Parent Night to explain the 1:1 netbook project, supporting teacher attendance at the CUE conference in Palm Springs, and development of a district-wide Technology Leadership Committee to provide oversight to the planned expansion of 1:1 netbooks across all grade levels.

Highlights of Teacher Survey Data

Teacher Needs Assessment Survey: Fall 2010

Indicate the extent to which you agree with the following statements.	
Answer Options N=20	Percent Agree/ Strongly Agree
Developing student activities that require the use technology for discussing ideas and reflecting on learning experiences.	75%
Developing student activities that require the use technology for collecting, manipulating, and analyzing data.	88%
Developing student activities that require the use of technology for peer collaboration.	69%
Using technology to develop/enhance students' problem-solving skills.	81%
Using technology to develop/enhance students' critical thinking skills.	88%
Using technology to develop/enhance students' creative expression.	81%

Technology Use Survey

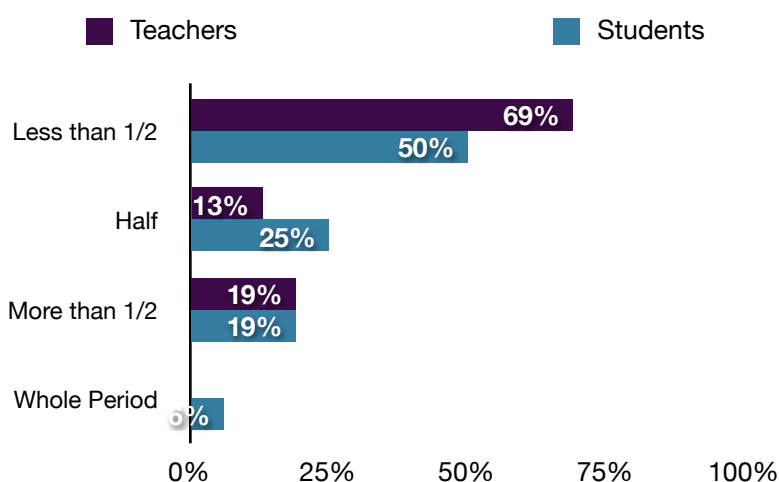
Hours of TIS Training on Various Topics

Since the beginning of the school year, how much time has your Technology Integration Specialist spent helping you with the following uses of technology?			
Answer Options	1-10	11-20	20+
Internet searching for content area resources.	25%	25%	19%
Student Internet searching for assignments.	19%	19%	6%
Student use of email to submit assignments.	38%	13%	13%
Online submission of homework/reports	31%	13%	13%
Student use of email to collaborate on assignments.	31%	13%	13%

Since the beginning of the school year, how much time has your Technology Integration Specialist spent helping you with the following uses of technology?

Answer Options	1-10	11-20	20+
Student use of online apps (web-based tools) to collaborate on assignments.	13%	19%	19%
Student-developed slide presentations as part of an assignment.	19%	25%	19%
Student use of video as part of an assignment	25%	19%	19%
Digital storytelling as part of an assignment.	13%	6%	19%

Frequency of Teacher and Student Use of Technology in a Given Class Period

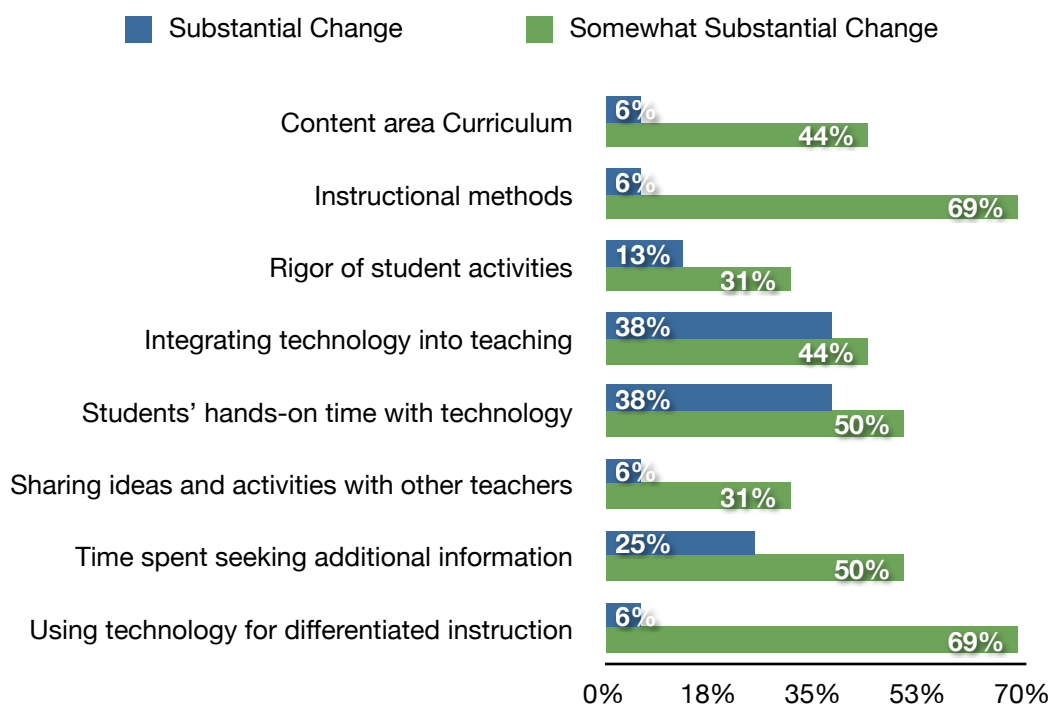


Teachers' Perceptions about the Use of Technology

Indicate the extent to which you agree with the following statements.

Answer Options N=16	% Agree/Strongly Agree
Students are using technology more this year than they did last year.	100%
I feel I have the necessary skills to teach with technology.	88%
I feel I have a good understanding of the best ways to use technology in my content area.	81%
Most times I am able to answer students' questions about the technology we are using.	93%
I am often looking for ways to increase students' use of technology.	88%
Teacher collaboration and support for technology use has increased.	94%

Changes in Teaching Practices



Most significant teaching change related to having 1:1 netbooks

- 👤 Increased comfort with student-centered learning
- 👤 Increased use of supplemental material
- 👤 Increased use of web apps for student assignments
- 👤 Increased organization and efficiency

Most significant student learning change related to having 1:1 netbooks

- 👤 Increased student engagement
- 👤 Increased motivation of low-achieving students
- 👤 Increased use of technology
- 👤 Netbooks facilitate anytime/anywhere learning

Project Director Perspective

From the project director's perspective, the impact of the 1:1 laptop initiative has been "pretty substantial." He sees the benefit of having piloted the roll out at one school before expanding the initiative throughout the district. The slow roll out allowed the district to figure out, in some cases "the hard way" and through trial and error, what the technical support issues would be. This is the one area that the project director indicated

needed to be “nailed down” in order to lay the groundwork for a successful expansion into additional schools and grade levels.

He indicated that communication and clearly defining roles related to various responsibilities and decision making associated with the expansion were critical. He is confident that the formation of the Technology Leadership Committee was the right way to go in terms of ensuring that all stakeholders (teachers, administrators, and IT staff) have a voice in how the implementation and ongoing support of the laptop expansion will occur.

In terms of meeting the needs of teachers, the project director is satisfied that the Technology Integration Specialist training model works and the district will continue to support the positions in the upcoming school year. As it relates to the impact on students, the project director indicated that they are benefiting in many ways; key among them is the ability to take the netbook home. After a successful Parent Night in which the laptop program was explained and parents’ concerns about Internet safety were addressed, the project director reports that there are very few, if any, issues related to students’ care of the computers or abuse of the privilege of taking the computers home. The availability of the netbook at home has changed how students submit their homework (i.e., many submit their assignments online). He also remarked on how the students have been self-starters in terms of learning how to use the new equipment. Students receive no formal instruction on how to make video projects, yet when given the equipment they are able to work independently or in groups to figure things out and share with others.

Lyon County

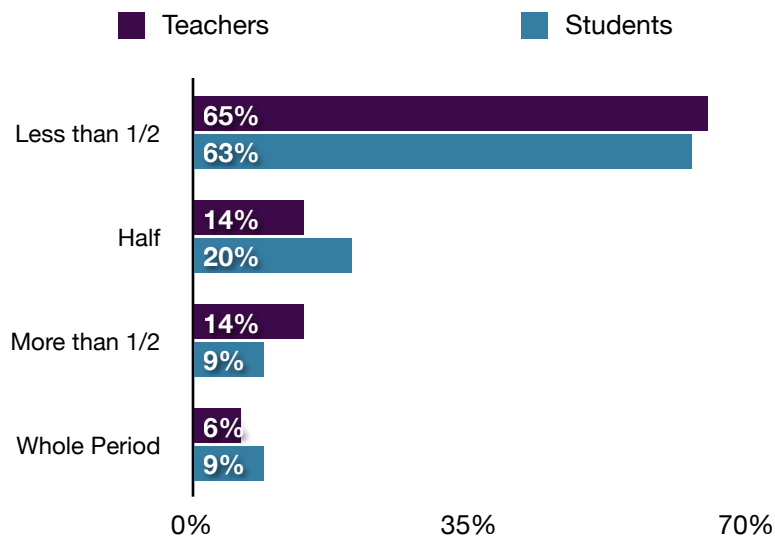
Year 2 Grant Activities

Lyon County used its ETIF Grant grant money to upgrade the district's network with new switches and routers to improve speed and stability. The upgrade was a two year process where the "back end" was installed during Year 1 and the "front end" of connecting the district's computers to the network was done during Year 2. With the exception of consultation with the vendor who provided the equipment used for the upgrade, all of the work was done "in house."

Highlights of Teacher Survey Data

At which grade level do you teach?	
Answer Options N=206	Response Percent
Elementary	48%
Junior High	19%
High School	33%

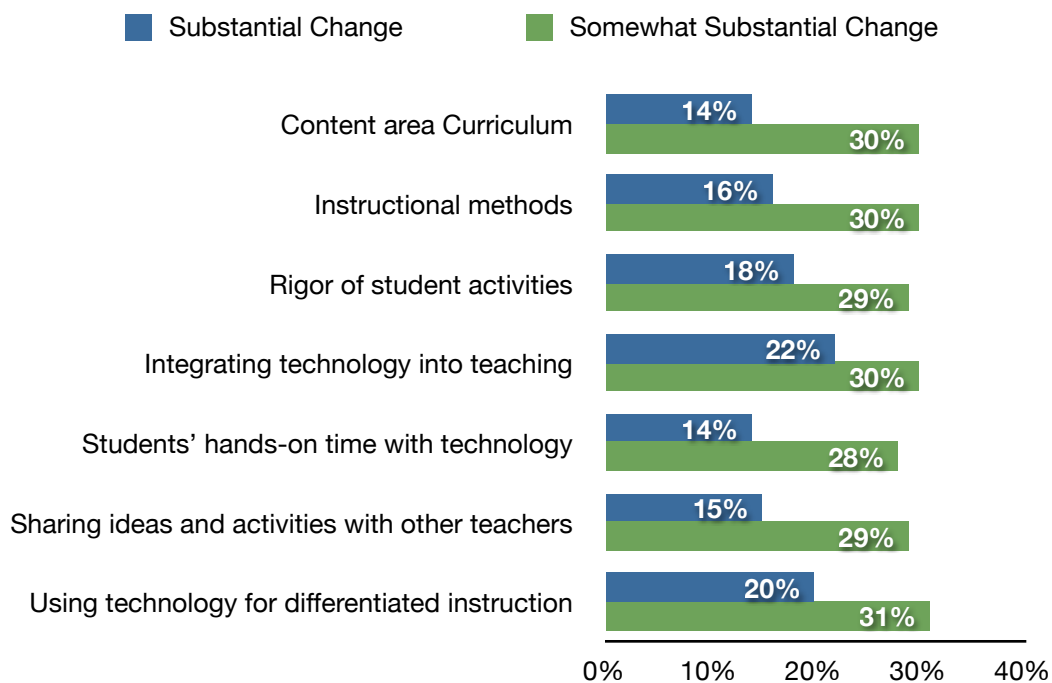
Frequency of Teacher and Student Use of Computers in a Given Class Period



Teachers' Use of Technology as a Result of Upgrades to the Network

The upgrades to the network have increased...	
Answer Options N=206	Percent Agree/Strongly Agree
The overall frequency with which technology is used during class.	71%
The time I spend on the Internet looking for content-specific resources.	73%
The overall frequency with which students access the Internet during class.	62%
The frequency of student Internet research.	56%
My use of email to communicate with teachers, parents, and/or students.	80%
My overall productivity.	80%

Changes in Teaching Practices



Teachers' Perceptions about the Use of Technology

Indicate the extent to which you agree with the following statements.

Answer Options N=206	% Agree/Strongly Agree
Students are using technology more this year than they did last year.	71%
I feel I have the necessary skills to teach with technology.	73%
I feel I have a good understanding of the best ways to use technology in my content area.	64%
Most times I am able to answer students' questions about the technology we are using.	81%
I am often looking for ways to increase students' use of technology.	79%
Teacher collaboration and support for technology use has increased.	54%
I feel I need technology-related professional development to better utilize the technology to which I have access.	81%

Most significant teaching change related to the upgraded network

- 👤 Increased use of Internet resources due to faster connection
- 👤 Increased time spent looking for supplemental Internet resources
- 👤 More efficient communication between staff
- 👤 Increased use of technology based on network reliability
- 👤 Accessing more resources
- 👤 Trying new approaches to teaching and using technology

Most significant student learning change related to the upgraded network

- 👤 Increased use of classroom computers and computer lab
- 👤 Increase in the number of research-related project students do
- 👤 Increased opportunity for individualized instruction
- 👤 Improved MAPS scores

Teacher Complaints about the Network

- 👤 Increase in the number of blocked websites
- 👤 Compatibility issues with some previously accessible software
- 👤 Network speed not noticeable on old computers

Project Director Perspective

While some teachers are very disgruntled over the restricted access to sites and software which were previously accessible, the project director rated his satisfaction with the grant implementation a “12” on a scale from 1-10. According to the project director, “They are using it [the network] more and now it’s slow again. They were trying to use some software and we didn’t have enough bandwidth. The network infrastructure improved but then our Internet bandwidth was not enough, but now that’s being addressed.” The district received eRate funds that it will use to increase bandwidth for classroom computing.

The biggest challenge that the district faced in implementing the grant was not having enough staff. Because the work was done in house, people had to be pulled from their regular positions to help complete the job. Now, even though the district is reportedly losing students, Lyon County’s commitment to providing bandwidth for families and training parents is bolstered by the infusion of BTOP money, and there are plans to hire new technology staff to address this need.

As mentioned in the Year 1 Interim Report, Lyon County was able to use the ETIF Grant as seed money that generated a domino effect in terms of its ability to secure additional funding to meet its technology needs. According to the project director, because the district was able to upgrade its Internet functionality, that made it possible to apply for ARRA Broadband Technology Opportunity Program (BTOP) monies because they were able to show the \$83K in state grant money as in-kind on their BTOP application. The project director pointed out that Lyon County was the only district in the state to receive a BTOP grant. This award for \$750,000, given in September 2010, was used to fund six new public computer centers with approximately 120 workstations to serve the entire community and provide technology training for county residents. The district also received \$350,000 in FIE earmark money and is planning to apply for a \$500,000 distance learning grant.

Given the tremendous influx of recent technology dollars into the county, the project director sums it up by saying, “We were so far behind, but now we are teetering on being outstanding instead of just average.”

Mineral County

Year 2 Grant Activities

During Year 2 of the Ed Tech Fund grant, Mineral County continued to improve the district's network infrastructure by switching from a Windows to Novell environment. The district was able to purchase its new servers for less than originally budgeted for in its proposal. This made it possible for the district to purchase a third server and meet its infrastructure needs without having to look for additional funds to meet the need.

Highlights of Teacher Survey Data

At which grade level do you teach?

Answer Options
N=27

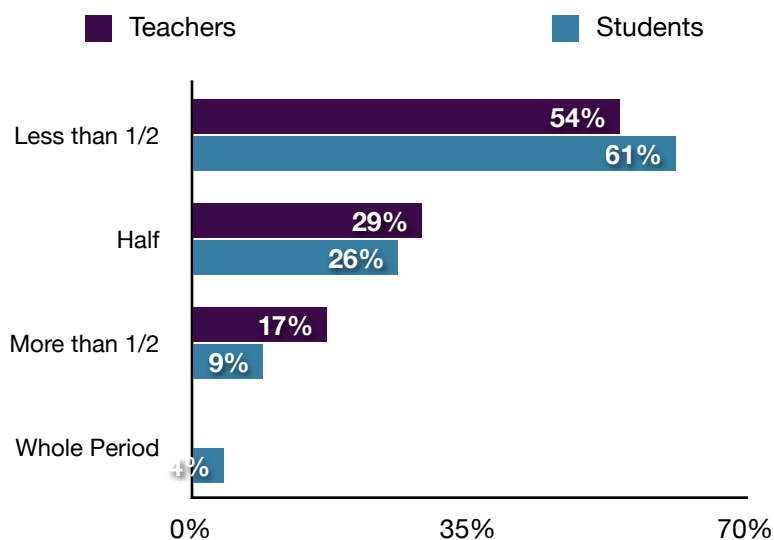
Response Percent

Elementary 59%

Junior High 22%

High School 19%

Frequency of Teacher and Student Use of Technology in a Given Class Period



Teachers' Agreement with Statements about the Use of Technology

Indicate your level of agreement with the following statements.

Answer Options
N=26

Percent
Agree/Strongly Agree

The overall frequency with which technology is used during class. 57%

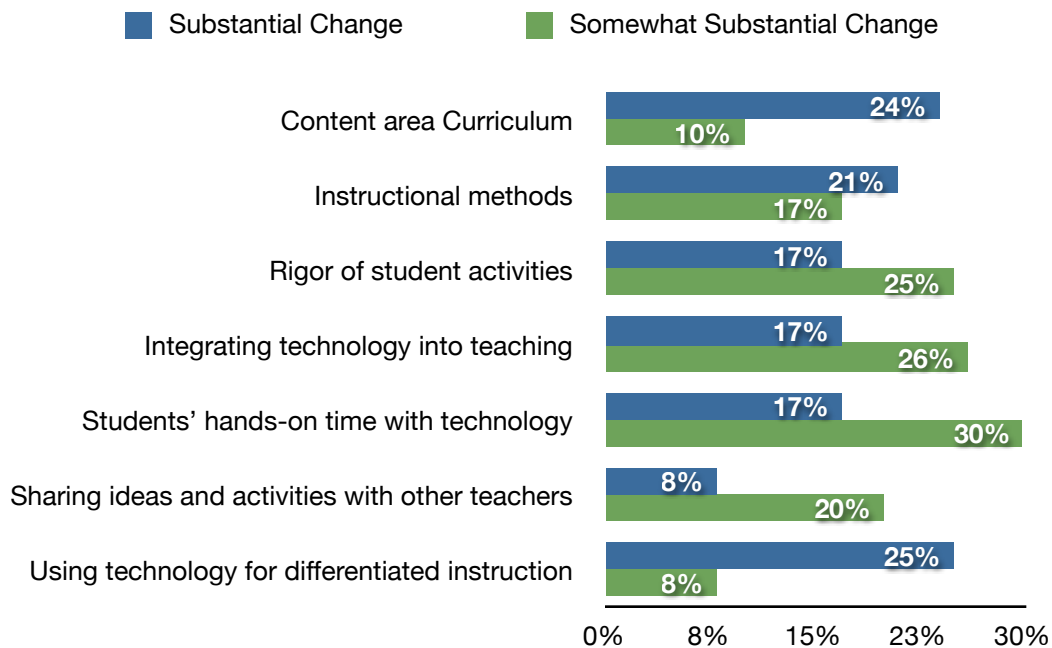
Indicate your level of agreement with the following statements.

Answer Options
N=26

Percent
Agree/Strongly Agree

The time I spend on the Internet looking for content-specific resources.	59%
The overall frequency with which students access the Internet during class.	52%
The frequency of student Internet research.	58%
My use of email to communicate with teachers, parents, and/or students.	71%
My overall productivity.	67%

Changes in Teaching Practices



Teachers' Perceptions about the Use of Technology

Indicate your level of agreement with the following statements.

Answer Options
N=27

Percent
Agree/Strongly Agree

Students are using technology more this year than they did last year.	81%
I feel I have the necessary skills to teach with technology.	81%

Indicate your level of agreement with the following statements.

Answer Options N=27	Percent Agree/Strongly Agree
I feel I have a good understanding of the best ways to use technology in my content area.	74%
Most times I am able to answer students' questions about the technology we are using.	96%
I am often looking for ways to increase students' use of technology.	85%
Teacher collaboration and support for technology use has increased.	56%
I feel I need technology-related professional development to better utilize the technology to which I have access.	76%

Most significant student learning change related to filtering software update

One of the features of the updated filtering software is the ability for Oasis Online to push software and URLs to the student desktops. One teacher commented that, “students can access what they need more directly without having to search through so much indirectly related material.” Another teacher commented that without the worry of students accessing inappropriate sites, students can use Internet resources “to progress at their own pace.” Yet another teacher shared that because “the students do things quicker, they are more excited to work.” Conversely, teachers also echoed the problems with blocked sites, such as, “students have mentioned that it is more difficult to locate pictures for assignments because images may be blocked,” and students having “fewer resources available.”

Project Director Perspective

The project director, who is also a co-owner of Oasis Online, the company to which Mineral County outsources its Technology Management, reported that the new filtering system “is working great.” He indicated that there were a few bugs that needed to be worked out with the switch from Windows to Novell, but indicated that the ability to streamline central management of the network makes things easier for IT support as well as for students accessing content. As he described it, “If a teacher is doing a Webquest and they want students to access the URLs on the desktop, we can just put the URLs as icons on their desktop. We can load software and icons very quickly and easily. We aren’t working on one computer at a time; now it’s done in one afternoon.”

In regard to teachers’ complaints about the new filtering system restricting access to sites, the project director indicated that Oasis Online is working with campuses on a case-by-case basis. Consistent with reports from the district superintendent, Oasis Online will open access to restricted sites when they receive a help ticket from the teacher that also includes administrative approval. This does not happen instantly; typically teachers need to plan in advance to submit their requests.

District Superintendent Perspective

The district superintendent holds the position that the level of satisfaction with grant implementation is probably higher for the IT staff at Oasis Online than it is for her instructional staff. She is very attentive to teachers' concerns and needs related to being able to make professional decisions about the content they need and being able to access it when they need it. She understands that teachers are frustrated when they plan at home where access is unrestricted and then cannot implement their lesson because a site is blocked. She admits that teachers are adjusting and that "it's getting better, but the teachers are still frustrated with access."

According to the superintendent, it took the better part of the 2010-11 school year to establish a compromise position between Oasis Online and the school district. Under the compromise agreement, which absolves Oasis Online of any liability related to students accessing inappropriate content, with the principal's approval, a teacher may request that a URL be opened and Oasis Online will make it accessible. The superintendent indicated that under this arrangement "the professional liability lies with the principal and the teacher...If they misuse it they will get fired."

While the ETIF Grant met the district's need for three Novell servers, the Superintendent is concerned that in five years the district will not have funds to purchase new servers again. She described the district's budget as "bare bones" and shared that "funding opportunities like this [ETIF Grant] are invaluable for little districts like Mineral. It's the only way we can get technology."

Pershing County

Year 2 Grant Activities

Pershing County used its Year 2 ETIF Grant money to continue replacing outdated computers for its eMints teachers at the elementary school and middle school. During Year 1, funds were used to replace computers for a few teachers who received them during the 2009-10 school year, but most of the eMints teachers did not receive their new computer until the 2010-11 school year. The project director wanted to have the computers ordered and configured at the same time so she held the bulk of the Year 1 award in reserve until she could draw down the Year 2 award in July 2011 and put in one order. No additional ETIF Grant funds were used in Year 2 to purchase additional iPod Touch for elementary and middle school teachers. Because the replacement of computers was associated with a group of teachers who were already immersed in technology integration through their eMints training, evaluators chose to focus on gathering technology use data only from the few teachers who received iPod Touch devices.

Highlights of Teacher Survey Data

Two elementary and two middle school language arts teachers responded to the Technology Use Survey. In the first year of the grant the only had enough money to buy one iPod Touch for the eight teachers who wanted to try them out. Through a combination of reallocating devices and purchasing additional devices from another funding source, a few teachers ended up with more than one iPod Touch in Year 2. Among the four teachers who responded to the survey, one teacher reported having eight iPod Touch, two reported having five each, and one teacher has one iPod.

Frequency of Teacher and Student Use of Technology in a Given Class Period





When asked how much the iPod Touch devices are used for instructional purposes, three of the teachers reported that they and their students use the iPod Touch, on average, less than half of a given class period. One teacher reported that she uses her iPod Touch at least half of a given class period, and the teacher who has just one iPod Touch selected the “not applicable” response to this question.

When asked to quantify the iPod Touch use in terms of hours per week, two teachers responded “less than 30 minutes,” one teacher responded 30-60 minutes, and one teacher responded one to two hours.



Changes in Teaching Practices

As it relates to integrating technology into their teaching and integrating students’ hands-on time with technology, two teachers reported that they had made very little change and two reported that they had made substantial changes. Two teachers also reported that having the iPod Touch resulted in a substantial change to how they use technology to plan for differentiated instruction. Three of the four teachers reported that they had made somewhat substantial changes to the rigor of student activities as a result of having the iPods. Additional evidence to support teachers’ report of increased rigor of student activities is a review of the iPod Apps that teachers reported using most frequently. These included Apps to support learning in math, reading, and social studies, such as See Read Say, Word Magic, Froggy Math, Math Dr., Pocket Phonics, Stack the Countries, and U.S. States and Capitals.

Most significant teaching change related to using the SMARTBoard

-  Incorporating technology into the lesson.
-  I only have one iPod Touch device. I use it more as an incentive when [students are] finished with their class assignment.
-  I use them mainly during center time. The children are excited to use them. Everyone gets a turn when I just have 5 iPod Touch.
-  I can give an iPod touch to a student who is done, and have them work independently on skills while I am helping others.

Most significant student learning change related to using the SMARTBoard

-  Students become instantly engaged when using technology.
-  Students are more eager to work on tasks on the iPod touch than on paper.

Project Director Perspective

The project director indicated that she is satisfied with the grant implementation. In addition to the iPods that were purchased with the grant, the project director was able to use \$20,000 in Title I money that the elementary school principal had to create a mini-class set of iPods for the five teachers who received an iPod Touch in Year 1. That money was also used to purchase a set of 20 iPods for the elementary computer lab, so students have a lot more access to these devices. Given the positive feedback from the teachers who used the iPods in Year 1, more teachers were interested in using them in Year 2 so it was easy to make the decision to allocate some of the Title I funds toward purchasing more iPods. The Title I funds were also used to purchase mounted projectors and interactive whiteboards, which make it easier for teachers to share iPod content with the entire class. The district does not have a budget for replacing damaged iPods, but the project director indicated that teachers are taking very good care of them; they all used their own money to buy protective cases.

The project director did not indicate any major challenges to implementing the grant. The plan was fairly straightforward to meet the immediate need of replacing old computers; however, she did mention that grant funds did not fully cover the replacement because enrollment went up and more computers needed to be purchased. Finally, in hindsight, the project director reported that the one thing she was not able to accomplish with the grant was providing teachers with professional development.

One contextual change of note for Pershing County School District is that the project director, who provided technology support to the district, transitioned out of that role in December 2010 and the district subsequently contracted with Oasis Online to meet their technology management needs. The project director indicated that teachers were having to adjust to that change.

Storey County

Year 2 Grant Activities

Storey County used its Year 2 funds to replace classroom computers that were 8-9 years old. Given the availability of funding, the district purchased 20 three-year-old refurbished machines that came with 17" monitors at a price point of approximately \$500 per machine compared to \$1000 for new machines. The computers were placed in 1st through 5th grade classrooms, with a few going to middle school and high school classrooms.

Highlights of Teacher Survey Data

Six teachers responded to the Technology Use survey. The respondents included two elementary, two middle school and two high school teachers. Among the middle and high school teachers, two of them teach math and two of them teach social studies.

Teachers' Agreement with Statements about the Use of Their New Computer

Access to a new classroom computer has increased...	
Answer Options N=6	Number Who Agree/ Strongly Agree
The overall frequency with which technology is used during class.	6
The time I spend on the Internet looking for content-specific resources.	5
The frequency with which I use a projector to display web-based or other information to the class.	5
My use of presentation software to create slide shows for my class.	2
The overall frequency with which students access the Internet during class.	4
The frequency of student Internet research.	4
My use of email to communicate with teachers, parents, and/or students.	5
My use of technology for administrative tasks (i.e., attendance, grading)	5
My use of school and/or district-provided software programs.	5
My overall productivity.	6
My interest in doing more to integrate technology into my curriculum.	6

Frequency of Teacher and Student Use of Computers for Instructional Purposes

On average, how much time in a given class period are computers used for instructional purposes?

Answer Options N=6	Less than 1/2 of the period	Half of the period	More than 1/2 of the period	The whole period
Teacher	4	0	1	0
Students	4	2	0	0

Changes in Teaching Practices

To what extent have you made changes in your teaching practice as a result of having a new classroom computer?

Answer Options N=6	No change	Little change	Somewhat substantial	Substantial
Content area curriculum	-	2	4	-
Instructional methods	-	-	4	2
Rigor of student activities	-	3	2	1
Integrating technology into your teaching	-	1	3	2
Integrating students' hands-on time with technology	-	-	4	2
Sharing ideas and activities with other teachers at your school	1	2	2	1
Using technology to plan for differentiated instruction.	-	-	3	3

Teachers' Perceptions about the Use of Technology

Indicate the extent to which you agree with the following statements.

Answer Options N=6	Strongly Disagree	Disagree	Agree	Strongly Agree
Students are using technology more this year than they did last year.	-	-	2	4
I feel I have the necessary skills to teach with technology.	1	-	4	1
I feel I have a good understanding of the best ways to use technology in my content area.	-	1	3	1
Most times I am able to answer students' questions about the technology we are using.	-	1	5	-
I am often looking for ways to increase students' use of technology.	-	-	2	3

Indicate the extent to which you agree with the following statements.				
Answer Options N=6	Strongly Disagree	Disagree	Agree	Strongly Agree
Teacher collaboration and support for technology use has increased.	-	-	4	1
I feel like I need technology-related professional development to make better use of the new computer.	-	3	2	1

Most significant teaching change related to having access to new computers

- 👤 Shorter lectures and more visual communication
- 👤 We use the SMART Board throughout class to explore math concepts and applications.
- 👤 I can help students to achieve because it gives me one more computer to use myself or to use for with the SMART Board or for student use.
- 👤 Since the computers are in the classroom, some students can work on computer programs or research, while I work with other students.

Most significant student learning change related to using the SMARTBoard

- 👤 Connecting visual learning with numerical learning
- 👤 More access to the Internet
- 👤 They like using the SMART Board more than just seeing things in a textbook.
- 👤 Students can work individually on programs when there are more computers. It increases their confidence as well.
- 👤 The students are more eager to research and learn outside information.

Project Director Perspective

The project director is pleased with the decision to use ETIF grant funds to replace classroom computers. Although the district purchased refurbished computers, the project director is satisfied that he can get twice as many computers by doing so and expects the computers to last for at least 3-4 years before they need replacing.

While there is no foreseeable funding source to support the superintendent's plans, the project director reported that the district is interested in trying a 1:1 laptop program at the elementary schools and purchasing online curriculum from Pearson. The Superintendent is also interested in doing a 1:1 program at the middle school with either netbooks or iPads.

Washoe County

Year 2 Grant Activities

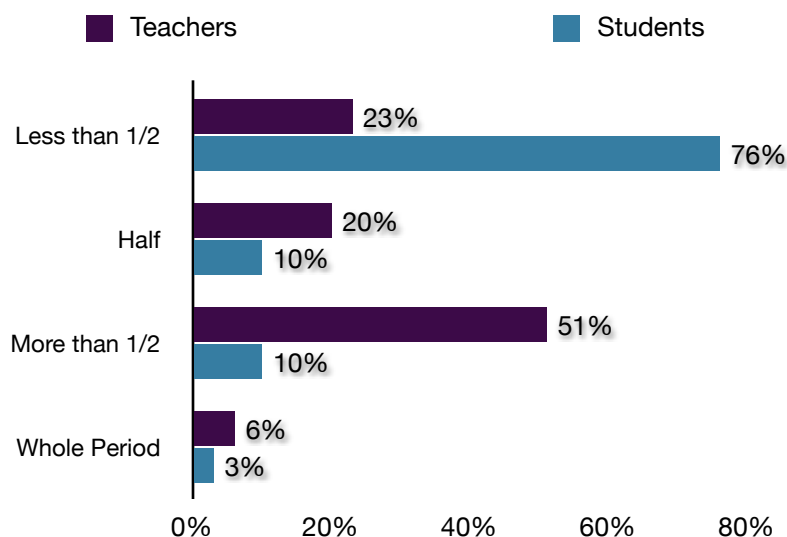
Washoe County continued to support teachers through professional development and the purchase of 35 new Promethean Boards for teachers' classrooms. The interactive whiteboard training was offered to teachers through a series of training sessions that included one hour sessions provided twice a month during PLC meetings, 1.5 hour sessions offered during early release days, and two eight hour, multi-day training sessions on ActivBoard Core Essentials and ActivBoard Intermediate Essentials.

Year 2 ETIF grant money was also used to update equipment used as part of the Pathway Project, including the purchase of 43 laptops, 26 teacher iPods, and 750 student iPods. Some activities that were in the funded proposal, such as the Cloud computing pilot project and training IT staff on the new server system, did not come to fruition in

Highlight of Teacher Survey Data

At which grade level do you teach?	
Answer Options N=35	Response Percent
Elementary	40%
Middle School	26%
High School	31%
Middle School & High School	3%

Frequency of Teacher and Student Use of Technology in a Given Class Period



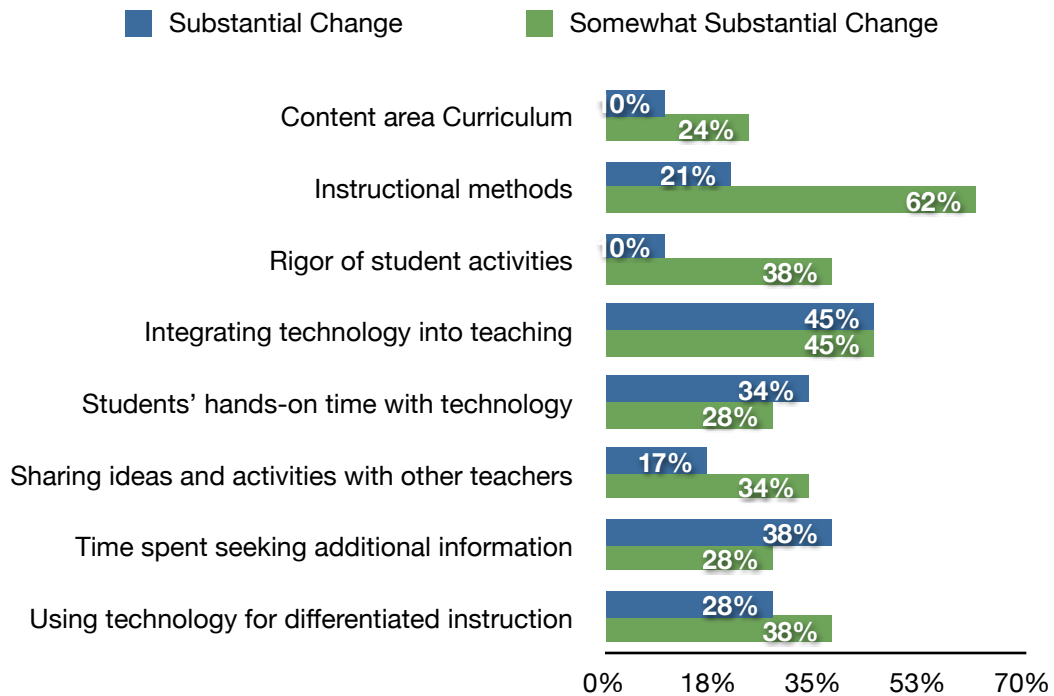
Professional Development Feedback

Indicate your level of agreement with the following statements.	
Answer Options N=23	Percent Agree/Strongly Agree
The training objectives were clear.	96%
The difficulty level of the training was appropriate.	96%
The training was adequately paced.	83%
The training was well organized.	86%
There was an adequate balance between information gathering and hands-on activity.	82%
There were adequate opportunities to ask questions.	96%
There were adequate opportunities to receive feedback.	86%
The feedback I received was useful.	90%
Participating in the training was a good use of my time.	91%
The breadth and depth of the training content met my expectations.	87%
The training helped me build on what I learned last year. (n=8)	100%
The focus of the training was directly linked to new things I'm trying/would like to try in my classroom.	80%
The training provided me with strategies that I could immediately put to use in my classroom.	87%
Overall, the training was of high quality.	91%

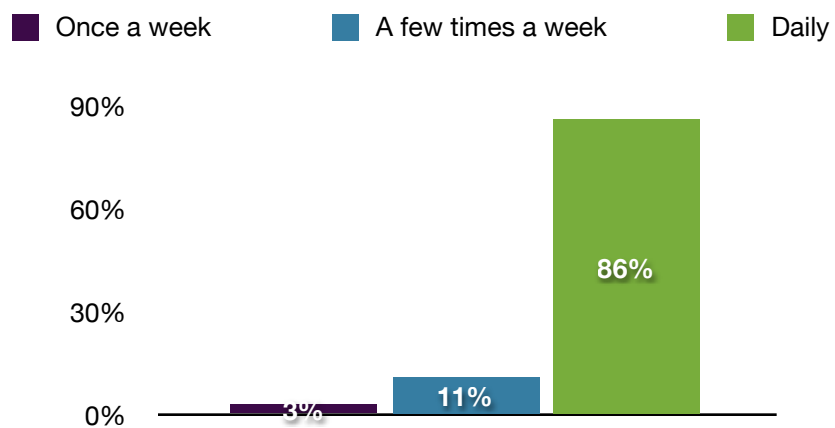
Teachers' Perceptions about the Use of Technology

Indicate the extent to which you agree with the following statements.	
Answer Options N=29	% Agree/Strongly Agree
Students are using technology more this year than they did last year.	86%
I feel I have the necessary skills to teach with technology.	86%
I feel I have a good understanding of the best ways to use technology in my content area.	79%
Most times I am able to answer students' questions about the technology we are using.	97%
I am often looking for ways to increase students' use of technology.	97%
Teacher collaboration and support for technology use has increased.	63%

Changes in Teaching Practices



Frequency with which Teachers Use their Promethean Board



Various Ways that Teachers Typically Use the Promethean Board

Indicate the ways you typically use the Promethean Board?	
Answer Options N=35	Response Percent
Presenting and reinforcing learning routines and schedules	80%
Facilitating individual or small group learning activities	60%
Utilizing flexibility to extend learning based on student generated ideas	51%
Engaging students in interactive learning games	60%
Testing for understanding/quick assessment	46%
Increasing supplemental content presented on a given topic/concept	71%
Differentiating instruction	57%
Saving class discussion notes for future use	57%

Most significant teaching change related to using the Promethean Board

- 👤 Adding interactive components to lessons
- 👤 Increased efficiency as a result of saving Flipchart lessons
- 👤 Decrease in the amount of paper materials handed out to students
- 👤 Increase in the amount of supplemental material added to lessons

Most significant student learning change related to using the Promethean Board

- 👤 Increased student engagement
- 👤 Increased interaction with teachers during lesson
- 👤 Increased motivation to share work with the class
- 👤 Increased use of ActivExpression

Project Director Perspective

The project director is satisfied with the implementation of the ETIF Grant in that Washoe County achieved its goal of placing interactive whiteboards in classrooms throughout the district. In observations of classroom implementation it is his assessment that most teachers are still at what he refers to as “level one” in their use of the Promethean Board. He attributes this partly to the fact that as the district’s only technology trainer he does not have time to provide more in-depth training that teachers need. In responding to the question about lessons learned from implementing this grant he shared that having one person responsible for training “is not effective.” He felt that the teachers who attended the professional development needed “built in reflective time,” but lamented that as the Professional Development Director, the more time he spends on

administrative tasks, the less time he has to do his training job. He believes that offering quality online professional development will be the key to moving teachers further along in their use of the whiteboards. Furthermore he believes that, "We must also raise the profile of Professional Development initiatives from just small site stuff to an emphasis on district level commitment."

One significant change in the school district which could potentially impact future professional development is the folding of these services into the Human Resources Department. This move came about when the district's Educational Technology Department (under which PD previously resided) was disbanded after the director retired. The project director expressed uncertainty about the HR Department's commitment to the ongoing professional development that teachers need.

He is also concerned about the district's IT support needs. One of the greatest challenges he faced in implementing the grant in Year 2 was transitioning solely to a professional development role without having the troubleshooting technical support he had in Year 1 when PD was part of the Ed Tech Department. He indicated that "It is very frustrating trying to do PD and having to worry about how to get the equipment running and keep it running."

In reflecting on what was not accomplished with the grant the Project Director indicated that, "We did not do all that we should've, but we did do some IT training." The district ended up buying only one server for Compass Learning, but, by the Project Director's account, "[they] didn't buy the software in a timely way." At the time of the interview in early May 2011 he predicted that the installation of the software and migration to the server would be completed in June and the software available to students in fall 2011.

White Pine

Year 2 Grant Activities

White Pine County School District used its Year 2 grant funds to continue supporting the one high school math teacher who participated in the Nevada Pathway Project. Specifically, the Year 2 grant allocation was used to purchase additional iPods and laptops for a 1:1 student implementation as well as covering the travel expenses for the teacher to attend the State Educational Technology Conference held in Clark County in October 2010. Year 2 funds were also used to purchase USB drives, a laptop cart, and books used for professional development.






The high school teacher who participated in the Pathway project implemented the program with her Honors students and allowed them to take the iPod Touch home.

Highlights of Teacher Survey Data


The teacher reported that compared to Year 1 she is comfortable integrating students' use of laptops and iPods into her instruction. On average, in a given class period, the laptops are used for about half of the period and iPods are used less than half of the period.

As a result of participating in the Pathway Project, the teacher feels that she has made somewhat substantial change in her instructional methods, the extent to which she integrates technology into her teaching, the extent to which students have hands-on time with technology, sharing of ideas with other teachers, and using technology to plan for differentiated instruction.


The teacher also agreed with the following statements:

-  Students are using technology more this year than they did last year
-  I feel I have the necessary skills to teach with technology
-  I feel I have a good understanding of the best ways to use technology in my content area
-  Most times I am able to answer students' questions about the technology we are using
-  I am often looking for ways to increase students' use of technology

Most significant teaching change related to using the SMARTBoard

-  Just using the technology more - always looking for ways to incorporate it. Before, I wasn't able to do that on a daily basis.

Most significant student learning change related to using the SMARTBoard

-  I actually did a research project on it. I came to the conclusion that students do enjoy working on the technology and like our activities better when its included.

Project Director Perspective

The project director, who was assigned the responsibility at the end of Year 1 when the previous project director left the district, indicated that her primary responsibilities were expending the grant funds and handing out equipment. In that role she did not observe teacher and student use of the iPods and laptops and was not involved with monitoring the teachers participation in the professional development nor her instructional use of the technology.

She shared that the ETIF grant was enough to support one teacher with 1:1 iPods and laptops for one class of students. The district wants to expand to all high school classrooms, but they would need to look for funding to do so. She shared that only two people in the district work on grants; one person writes the proposals and she handles the finance side. She said that “it can get overwhelming” for the two of them and that because the district is so small, “the most difficult part is the matching funds that are required.” She also shared that given their demographics, much of their technology investments are in career and technical education so students can get the skills they would be using in fields such as auto repair and construction.